

JOURNAL of the American Veterinary Medical Association

FORMERLY

AMERICAN VETERINARY REVIEW

(Original Official Organ U. S. Vet. Med. Assn.)

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PLAN FOR PORTLAND

At Des Moines it was voted to hold the next A. V. M. A. meeting in Portland, Oregon, almost the only large region that has never had a meeting. The great Northwest of the United States and Western Canada is a great live stock region, rich in natural resources and embracing some of the most wonderful scenery in the world.

The Portland meeting will offer an unusual opportunity to enjoy one of the finest trips that America offers and to attend the annual A. V. M. A. meeting at the same time. The round-trip rates are low and allow one to go over one route, say through the Canadian Rockies, and return by way of southern California, the Grand Canyon or the Royal Gorge. It is "the chance of a lifetime" to "see America first."

It has been our pleasant fortune to have traveled considerably in this and other countries and the whole "Mayo outfit" is unanimous in agreeing that the money spent in traveling is the best investment we have made, for we not only enjoy the trip while making it, but we live it over many times afterward. The investment in a trip to Portland is something that "moth and rust cannot destroy, nor thieves break through and steal." You will be a better veterinarian and a better citizen if you take this trip. Make your plans now to go next year.

N.S.M.

NOT SO BAD

From New Hampshire comes the good news that two members of the veterinary profession in that state were successful candidates for public office at the recent elections. Dr. Guy E.



DR. GUY E. CHESLEY

Chesley (U. P. '98), of Rochester, N. H., was elected a member of the State Senate from the 20th District, and Dr. Fay F. Russell (Corn. '16), of Concord, N. H., was elected representative to the State Legislature from his district. There are twelve members of the A. V. M. A. in the Granite State and one-sixth of them are in the state law-making bodies. Hats off to New Hampshire.

From Ohio comes word that Dr. A. S. Cooley (Chi. '87), of Cleveland, has been re-elected to the 86th Gen-

eral Assembly of Ohio from Cuyahoga County. He was endorsed by the Citizen's League of Cleveland (non-partisan). A recent issue of the *Bulletin* of the Academy of Medicine of Cleveland had the following to say in behalf of Dr. Cooley:

"Dr. A. S. Cooley, a member of the Academy of Medicine, is again running for the House of Representatives of the General Assembly. Members will recognize in Dr. Cooley a faithful friend of the medical profession and an ardent supporter of measures which have promoted the best interests of public health."



DR. A. S. COOLEY

Just as we go to press, word is received that Dr. R. C. Mills (K. C. V. C. '15), of Redfield, Iowa, was elected to the State Senate from his district.

A NOTE OF WARNING

In this issue is published a communication from Dr. S. E. Hershey, of Charleston, W. Va., relative to rabies and prophylactic vaccination. This letter contains a note of warning which we believe is very timely. Rabies has been unusually prevalent throughout many sections of the country the past year. This fact was brought out at Des Moines, in the paper presented by Dr. Adolph Eichhorn, also published in the JOURNAL this month.

It is questionable whether there is a disease concerning which there is so much ignorance and misinformation in the minds of the public at large. This fact is brought out all too frequently when we read the vacuous effusions appearing from time to time in the public press. The point brought out by Dr. Hershey is that dogs are often presented to veterinarians to be vaccinated, and it too frequently happens that these dogs have been previously bitten by other rabid dogs. This fact may or may not be known to the owner, much less to the veterinarian. Quite a number of vaccinated dogs have subsequently developed rabies. To the veterinarian the possibility of infection previous to vaccination is perfectly obvious, but not so to the disappointed owner.

In these respects, dogs, rabies and rabies vaccine do not form a combination that is uncommon or previously unheard of in medicine. Hogs have been known to develop cholera following vaccination. Horses have occasionally developed tetanus in spite of prophylactic vaccination. In the human family a few persons have been known to contract typhoid fever, although they were presumed to be properly immunized. But with rabies we have a disease characterized by a very variable period of incubation—one that is sometimes extended into months. A case was recently reported in this JOURNAL of an incubation period of sixteen months.

The single-injection method of prophylactic vaccination of dogs against rabies is on trial at the present time. There have been isolated reports of all sorts of things happening to dogs following vaccination. This is not to be wondered at, as the natural tendency would be to place the blame on vaccination if anything was noticed wrong in a dog that had been recently subjected to vaccination. This is all the more true in cities or towns where vaccination has been more or less compulsory and dogs have been vaccinated under duress, because the owners were opposed for some reason, either imaginary or real.

The future of anti-rabic vaccination is largely in the hands of the practicing veterinarian, and he will do well to throw every safeguard around it and thereby keep a biological product of highly valuable possibilities from falling into disrepute. Manufacturers of rabies vaccine should be equally as careful to place at the disposal of veterinarians a product that has been prepared only by safe and tried standard methods, with the most scrupulous accuracy and care, properly and sufficiently aged, and tested for both purity and potency as far as such tests are available.

MINNESOTA WINS IMPORTANT LEGAL BATTLE

An important legal battle has just been brought to a successful termination in Minnesota. Meeker County, for some reason, was selected as a suitable spot by the American Medical Liberty League for circulating their vicious, anti-tuberculin-testing propaganda, as exposed in the report of the International Committee on Bovine Tuberculosis, made at the recent meeting of the A. V. M. A. and published in the November issue of the JOURNAL.

In the case in question the defendants were the members of the Minnesota State Live Stock Sanitary Board and the members of the Board of County Commissioners of Meeker County. The case was tried in the Second Judicial District Court in St. Paul. Chapter 269, Laws 1923, provided for the testing of cattle for tuberculosis and authorized county boards to appropriate money therefor. In the opinion of the court it was stated that this law must be sustained, unless it clearly transgresses some constitutional limitation. In his decision Judge Sanborn further set forth:

"All laws incorporated by Legislature are presumed to be valid and it is the duty of the courts to declare them valid unless they transgress some limitation upon the power of the Legislature imposed by the state or federal constitution."

The principal objections made to this Act were (1) that it appropriates public funds for private purposes, and (2) that it is special and class legislation, granting to one class of citizens privileges and immunities not granted to others and, therefore, failing to operate uniformly.

These objections were not sustained, as will be noted from the following citation:

"The fact that the operation of this law is of pecuniary benefit to private individuals or corporations does not in any way affect its validity. Nearly

every law confers some peculiar benefit upon some individual or class of individuals, and it is only where no public purpose is served that the law becomes invalid. It would be impossible in this day and age to sustain a contention that the eradication of tuberculosis, even though done piecemeal and upon conditions, does not serve a public purpose. The Act is not special or class legislation. The question of classification for the purpose of legislation is left largely to the Legislature."

After directing attention to the marked change, in recent years, in the attitude of the courts upon the question of proper classification for the purpose of legislation, and giving several citations from important decisions, Judge Sanborn further stated:

"The reasons for this legislation are obvious. The Legislature desired to inaugurate a systematic eradication of tuberculosis from the herds of cattle in this State. It determined that the work should be done by counties and the expenses paid, in part at least, out of county funds. The question as to whether funds are available and should be appropriated was left to the discretion of the county boards. The county boards were not to make provision for the tests unless the majority of the cattle owners in the county should petition therefor. It was considered inadvisable to give the county boards absolute authority to require the testing of the cattle in the county if the owners were opposed to it. This was no doubt upon the theory that a compulsory testing of cattle against the will of a majority of the cattle owners in any county might be so unpopular as to defeat its own purpose and would serve to discourage rather than promote the public purpose for which the law was passed."

Judge Sanborn then went on to show that the plaintiffs were placing an improper interpretation upon the law in trying to make it appear as class legislation. He said:

"Does the fact that the law imposes as a condition that a majority of the cattle owners petition for the test make the law class legislation? These cattle owners have a very real interest in the testing of their cattle. They have no power to bring about the testing of them under the Act in question. All they can do is to petition the county board and the county board can then have the test made or not as it sees fit. The Legislature could compel the cattle owners to submit to such a test, regardless of how a majority felt. But, on the other hand, why should the law be declared invalid because they are given a voice in the matter? Where an evil exists, the Legislature is not required to use the most effective weapon. It is enough that the weapon chosen is aimed at the evil."

The decision then further stated:

"In effect, the Legislature declares that the appropriation of funds by a county for the testing of cattle is a proper public purpose. That if the appropriation is made, the State Sanitary Board shall assist the county in making the test, but that the test shall not be made if the majority of the cattle owners do not petition for it. Regardless of what action the county takes, the law is still operative and still applies to it and remains to be taken advantage of at any time.

"There is nothing offensive in using the county as a unit. It has been repeatedly done in this State for almost every purpose. . . .

"The fact of the matter is that it would be almost impossible to lay down a rule in this case under which this law could be held unconstitutional without affecting a great mass of existing legislation which is based upon the same general legislative theory. I am satisfied that the Act violates no constitutional limitation."

Dr. C. E. Cotton, State Veterinarian of Minnesota, feels very much encouraged over the outcome of this case, even though it is quite likely to be appealed to the Supreme Court. It is to be hoped that the plaintiffs will appeal the decision. The Minnesota officials have presented a very strong case, and it is thought that the decision will be upheld by the higher court. The whole matter, it might be stated, started from propaganda spread abroad by a chiropractor, who was a candidate for the Legislature, and who imported speakers, into Meeker County, from the so-called "American Medical Liberty League." Happily, said candidate was defeated by a progressive farmer.

APPLICATIONS FOR MEMBERSHIP

(See October JOURNAL)

FIRST LISTING

- Brauner, Victor J. Box 271, College Station, Tex.
 D. V. M. Texas Agricultural and Mechanical College, 1922
 Vouchers: R. P. Marsteller and Mark Francis.
 Hamilton, William A. Danville, Vt.
 D. V. M. McKillip Veterinary College, 1917
 Vouchers: L. H. Adams and H. Preston Hoskins.
 Kreidler, C. G. New Capitol Bldg., Frankfort, Ky.
 D. V. M. Cincinnati Veterinary College, 1913
 Vouchers: W. H. Simmons and W. W. Dimock.

APPLICATIONS PENDING

SECOND LISTING

- Cox, O. F., Persia, Iowa.
 Griffiths, Robert, Viborg, So. Dak.
 Kern, Clyde L., 1050 Marietta St., Atlanta, Ga.
 King, Chester Anderson, Box 5, Cawker City, Kans.
 Kornetzky, Herman Charles, 5822 Indiana Ave., Chicago, Ill.
 Wallen, Carl J., 1142 Melrose St., Glendale, Calif.
 Williams, R. M., c/o B. A. I., National Stock Yards, Ill.

COMING VETERINARY MEETINGS

- New York City, Veterinary Medical Association of. Academy of Medicine, 17 W. 43rd St., New York, N. Y. Dec. 3, 1924.
 Dr. C. G. Rohrer, Secretary, 40 W. 61st St., New York, N. Y.
 Horse Association of America. Blackstone Hotel, Chicago, Ill. Dec. 3, 1924. Wayne Dinsmore, Secretary, Union Stock Yards, Chicago, Ill.
 Nebraska State Veterinary Medical Association. Lincoln Hotel, Lincoln, Nebr. December 9-10, 1924. Dr. F. R. Woodring, Sec.-Treas., Lincoln, Nebr.
 Western New York Veterinary Medical Association. Buffalo, N. Y. Dec. 11, 1924. Dr. F. F. Fehr, Secretary, 243 So. Elmwood Ave., Buffalo, N. Y.

- Massachusetts Veterinary Association. American House, Boston, Mass. Dec. 17, 1924. Dr. H. W. Jakeman, Secretary, 44 Bromfield St., Boston, Mass.
- Delaware Veterinary Medical Association. Wolf Hall, University of Delaware, Newark, Del. Dec. 19, 1924. Dr. C. C. Palmer, Secretary, Newark, Del.
- California State Veterinary Medical Association. Pasadena, Calif. Dec. 29-30-31, 1924. Dr. J. P. Bushong, Secretary, 414 North Larchmont Blvd., Los Angeles, Calif.
- Pennsylvania, Conference of Veterinarians of. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa. Pa. Jan. 6-7, 1925. Dr. Louis A. Klein, Dean, 39th St. and Woodland Ave., Philadelphia, Pa.
- New Jersey, Veterinary Medical Association of. Jersey City, N. J. Jan. 8, 1925. Dr. P. B. Silvester, Secretary, Princeton, N. J.
- Virginia State Veterinary Medical Association. Richmond, Va. Jan. 8-9, 1925. Dr. H. T. Farmer, Secretary, Richmond, Va.
- Indiana Veterinary Medical Association. Hotel Severin, Indianapolis, Ind. Jan. 13-14-15, 1925. Dr. R. H. Boyd, Secretary, 446 E. 10th St., Indianapolis, Ind.
- Cornell University, Seventeenth Annual Conference for Veterinarians at. Cornell University, Ithaca, N. Y. Jan. 15-16, 1925. Dr. V. A. Moore, Dean, N. Y. State Veterinary College, Ithaca, N. Y.
- Minnesota State Veterinary Medical Association. Radisson Hotel, Minneapolis, Minn. Jan. 15-16, 1925. Dr. C. P. Fitch, Secretary, University Farm, St. Paul, Minn.
- Mississippi State Veterinary Medical Association. Greenville, Miss. Jan. 19-20, 1925. Dr. C. G. Stalworth, Secretary, Drew, Miss.
- Iowa Veterinary Association. Savery Hotel, Des Moines, Iowa, and Iowa State College, Ames, Iowa. January 20-21-22-23, 1925. Dr. E. R. Steel, Secretary, Grundy Center, Iowa.
- South Dakota Veterinary Medical Association. Sioux Falls, S. D. January 28-29, 1925. Dr. C. C. Lipp, Sec.-Treas., Brookings, S. D.
- Alabama Veterinary Medical Association. Short Course for Practitioners. Auburn, Ala. Feb. 2-3-4-5-6-7, 1925. Dr. C. A. Cary, Secretary, Auburn, Ala.

THE PRESENT STATUS OF RABIES IN THE UNITED STATES¹

By A. EICHHORN, *Pearl River, New York*

Rabies occurred in the United States, according to authentic data, as early as the 18th century. It made its appearance first in the Northern Atlantic states but within a few years it spread southward. Since that time practically every part of the United States was at one time or other infected and in 1908, according to reports, the states of California, Idaho, Maine, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming were free of the disease. Recent reports, however, indicate that even these states have been invaded by the infection and, as a matter of fact, in some of these states the disease became a great menace to live stock industry and public health, due to the fact that the disease was communicated to animals of prey, especially coyotes, among which the disease spread to a considerable extent. They in turn, when infected, communicated the disease to dogs and other domestic animals and even to man.

There was no attempt at any time to collect accurate data on the geographical distribution of the disease and its prevalence in the various localities. From time to time efforts were made to obtain statistics on the occurrence of the infection in dogs and also on the number of persons bitten by infected dogs. The most comprehensive work of this kind was published by Dr. A. M. Stimson, in Hygienic Laboratory Bulletin No. 65, on "Facts and Problems of Rabies," in 1910, and by Dr. T. F. Sellers, Director of the Georgia State Board of Health Laboratories, published in the September issue of the *American Journal of Public Health*.

Sellers collected data on the geographical distribution of the disease from the various state boards of health. As a result of his inquiries he tabulated the data on the prevalence of the disease in the United States up to the year 1921. He established that in 1921, out of 29 states, a total of 5,558 heads were examined which showed 2,699 positive findings. The deaths in human beings from rabies from 1917 to 1921 were 168. Of this number 39 died during and after the Pasteur treatment.

Rabies is especially prevalent in the South Atlantic and Gulf states, which is no doubt due to the more favorable climatic con-

¹Presented at the sixty-first annual meeting of the American Veterinary Medical Association, Des Moines, Iowa, August 19-22, 1924.

ditions, permitting the wide range of dogs during all seasons and also due to the fact that in this territory a larger number of mongrel and stray dogs occur than in other parts of the United States.

In view of the fact that in many parts, especially so in the Eastern and Southern states, the control of rabies has been an acute question, both for health officials and live stock sanitarians, it was deemed advisable to obtain accurate knowledge on the present prevalence of the disease in the various states.

For the purpose of determining the extent of rabies in the United States, a questionnaire was formulated embodying the following questions:

1. How many dogs' heads suspected of rabies have been examined in your laboratory?
2. How many were positive?
3. How many other laboratories in your state examined dogs for rabies?
4. Approximately how many suspected cases of rabies in dogs were sent to laboratories in your state?
5. How many cases were positive?
6. Approximately how many persons took the rabies treatment?
7. How many persons died from rabies?

Replies were received from 34 boards of health. However, the information on questions 3, 4 and 5 was in many instances omitted or statements made that the data with regard to this inquiry were not available. Therefore, it is deemed advisable to omit them from the tabulation.

It should, however, be taken into consideration that in many of the states, aside from the state laboratories, many other municipal and private laboratories are conducting rabies examinations of suspected cases and therefore the total number of cases of rabies is considerably higher than would appear from the tabulated statements.

Likewise the numbers of persons compelled to take the Pasteur treatment as a result of exposure to rabies has also been much larger than indicated in the table since in many localities the treatment is ordered by the local authorities without sending a record of the same to the state board of health. In view of these facts it would be a fair estimate to accept that the tabulation represents approximately only 50 per cent of the cases of rabies and also of the number of persons compelled to take the rabies treatment, especially so if we consider those states from which returns to the questionnaire were not received.

In analyzing the table it becomes apparent that rabies must be considered as a dangerous, widespread, infectious disease and

that the authorities must direct their attention to its proper control. That rabies is a controllable disease has been conclusively established in several countries, such as England, where it has been entirely eliminated and in Germany, where, up to 1924, as a result of the adoption of the most stringent measures, it has been markedly checked. In other countries, however, where control measures were either neglected or were not sufficiently stringent, the spread of the disease continued until at the present time practically every country, especially in Central and Eastern Europe, is facing a serious situation in its effort to combat its spread.

Of course, during the War, in these countries, due to the shortage of veterinarians and concentration of efforts to pursue the War, the disease was neglected and its extension may be attributed to this fact. It is a recognized fact that due to these conditions it is more prevalent in the parts of Europe referred to than ever before. It might be of interest to mention the situation in Russia where rabies was always a menacing disease but since the War it has attained such wide distribution that, even with the limited facilities, over 50,000 persons were compelled to take the Pasteur treatment within one year and when we consider the fact that the treatment in those countries is applied only in centrally located Pasteur institutes, where the patients have to remain during the treatment, and to which they often times have to travel many hundreds of miles, one can readily see the seriousness of such a situation. Other countries, such as Poland, Czecho Slovakia, Jugo Slavia, Hungary and Austria, also report a greater prevalence of rabies since the War and the veterinary profession is now urging an educational campaign through the daily press and otherwise to direct attention of the public to the danger from this infection.

Considering the wide area in the United States and the large population, rabies is not as yet prevalent to the extent that it is in some of these European countries. However, we should not lose sight of the fact that, with the popularity of the dog at present, and with the increased number of dogs, the possibilities of a rapid extension of the infection is apparent.

It is not necessary to dwell upon efforts which have been practiced in attempting to control the disease. Every veterinarian is well aware of the fact that quarantine and muzzling measures are unpopular with the public and cannot be properly carried out. Therefore, such attempts have proved and will prove of no

avail. This has also been recognized in foreign countries where now the effort is directed towards a method of prevention by vaccination. In this respect Japan must be considered as the pioneer inasmuch as in that country the first serious attempts were made towards combating the infection with prophylactic immunization.

The splendid work of Umeno and Doi, reported in the *Kitasato Archives of Experimental Medicine*, 1922, proved the possibility of controlling rabies by prophylactic vaccination. In the original work the vaccination of 31,307 dogs was reported, with only two cases of rabies occurring among the vaccinated animals; whereas in the unvaccinated animals in the same territory the disease continued to rage. The progress since that time with the vaccination in Japan has been reported by Hata, in the *Journal of Immunology*, May, 1924, in which he summarizes the results of the vaccination in that country as follows:

"The results are presented of 104,629 preventive inoculations of dogs against rabies in Tokyo and Yokohama and their environs during the period since the adoption of Umeno's prophylactic method. It is shown that only 41 of the inoculated dogs developed rabies, while 1699 of the uninoculated group represented only one-third of the total number of dogs in the two prefectures. It is further stated that out of the 41 vaccinated dogs which did develop rabies a large percentage were exposed to the disease before the vaccination was undertaken. In the face of these results can any one fail to see the effectiveness and the splendid advantages from this vaccination?"

In an editorial comment the *Journal of the American Medical Association*, in the July 3rd, 1924, issue, discussing the "Prophylactic Inoculation of Dogs against Rabies," states as follows:

"The statistical evidence of the efficiency of the prophylactic treatment of rabies in persons bitten by rabid animals has long been too convincing to permit of doubt by reasoning people, however unconvincing it still remains to some with zoophilic or antimicrobial sentiments. Some Japanese observations on the prophylactic treatment of dog communities may be of interest to medical readers and acceptable to those who place animal life first in value. There is much rabies in Japan, and Umeno of the Kitasato Institute of Tokyo sought to reduce it by universal prophylactic immunization of the dog population, using a specially prepared and relatively active virus for this purpose. This has been applied as far as possible since 1919 in Tokyo, and since 1918 in Yokohama, about two-thirds of the dogs in these communities having been immunized. Figures are available to 1922, during which time there occurred forty-one cases of rabies in inoculated dogs, as against 1,699 cases in about half as many dogs in the same communities which were not inoculated. As a large proportion of the forty-one cases arose so soon after inoculation that they antedated the development of an immune condition, it is evident that this method of prophylaxis is highly effective and a valuable weapon in those communities in which rabies is frequent."

It is thus evident that the value of the prophylactic vaccination of dogs against rabies is scientifically established and well recognized. It seems, therefore, that the veterinary profession

should now follow a well-defined policy in promoting the control of rabies by the prophylactic vaccination, in preference to any method which has been heretofore devised. Unfortunately, similar to past experiences, the efforts of introducing any new procedure in the control of infectious diseases induces hypercriticisms and some of the "antis" to take a definite stand against such progressive methods. This apparently is also being experienced in the effort to introduce the prophylactic vaccination of dogs against rabies in localities where the disease has been recognized as being very prevalent. As a rule the health authorities are only too anxious to promote and introduce ordinances requiring compulsory vaccination in the boroughs and municipalities. Such efforts, however, are soon met with obstructions from the Society for the Prevention of Cruelty to Animals, antivivisectionists, etc.

It might be of interest to call attention to the recent publicity against rabies vaccination in the state of New Jersey, from the president of the New Jersey State Society for the Prevention of Cruelty to Animals. A circular letter was sent to the boards of health and also to the daily press in which it is stated that there is no such thing as a "mad dog" and it warns the general public against vaccination of dogs. The letter is a mass of inaccurate statements, such as claiming that the vaccination often induces rabies and death in dogs.

It is unfortunate that kennel clubs and societies for the prevention of cruelty to animals should spread such misinformation, especially so since any one with common intelligence should realize that vaccination with a single injection is by far less cruel to the animal than to subject him to muzzling for a long period.

It behooves the veterinary profession, therefore, to point out the erroneous stand which the anti-vaccinationists are taking in this matter and use their efforts in impressing dog owners and kennel clubs of the advantages of controlling rabies by a less cruel and more effective method.

The American Veterinary Medical Association could also, if necessary, refute statements which are inaccurate and detrimental to veterinary sanitary medicine, especially when a well-organized publicity of warning is directed against the inauguration of progressive means for the control of a disease such as rabies. Headliners as appeared in the daily press throughout the state of New Jersey, "State Society for the Prevention of Cruelty to Animals Warns Against Inoculating Dogs with

Serum"; "Japanese Injection Fluid Said to Paralyze and Kill the Animals"; "Experts Declare Hydrophobia Symptoms are Produced Largely by Imagination of Persons Bitten"; "Analysis Worthless," should be met with by statements of facts from state associations or individuals of the veterinary profession. While it is recognized that there might be an inclination to interpret such statements as an effort to promote the interests of the veterinarians, the great majority would be inclined to accept them as coming from sources competent to give sound advice on matters of this kind.

We must not lose sight of the fact that the activities of the government authorities and men of science have been directed to evolve an effective means of controlling this dreaded disease for the reason that its danger to the dog and mankind has been recognized and therefore any obstacles will have a tendency to stop progress in the right direction.

It is recalled that with the advent of diphtheria antitoxin many hypercritical and "doubting Thomases" wrote and expressed themselves against the injection of diphtheria antitoxin. Now everyone knows of the wonderful value of this splendid preventive and curative product, which made diphtheria no longer the dreaded disease which it used to be.

Veterinarians are primarily interested in the control and eradication of infectious diseases of animals. In the effort to accomplish this end the most effective means must be chosen. The fact that the means heretofore employed for the control of rabies have not succeeded and any measures, legislative or otherwise, passed for the control of the infection, failed, due to improper enforcement, it becomes apparent that vaccination offers a simpler and probably a more effective means of control.

Opposition against rabies vaccination can be readily met by education and sound arguments and therefore the efforts of the veterinarian should be directed to employ such means to popularize the vaccination of dogs. In most instances where public sentiment is aroused on account of the existence of the disease, the effort to enact ordinances for compulsory vaccination met with success, and such ordinances are in operation at the present time in many municipalities in various states.

From experience with the vaccination veterinarians can assure dog owners of the harmless effects of the vaccination, inasmuch as some veterinarians have already administered over 1,000 doses of this product without a single bad result. In some cases where

Replies Received to Questionnaire on Prevalence of Rabies

	STATE	NUMBER OF POSITIVE EXAMINATIONS OF DOGS IN STATE LABORATORIES				
		1920	1921	1922	1923	
1	Alabama.....	...	118	161	182	
2	Arkansas.....	76	58	25	26	
3	California.....	97	46	143	126	
4	Connecticut.....	4	12	32	30	
5	Delaware.....	7	14	16	17	
6	Florida.....	65	92	79	114	
7	Georgia.....	289	403	487	423	
8	Indiana.....	55	44	49	22	
9	Kansas.....				70	
10	Kentucky.....	38	58	75	69	
11	Louisiana.....	7	2	8	40	
12	Maine.....				1	
13	Maryland.....	19	20	22	34	
14	Massachusetts.....	115	164	242	274	
15	Michigan.....	27	30	19	28	
16	Minnesota.....		Not	stated		
17	Mississippi.....	103	172	184	210	
18	Missouri.....		Not	stated		
19	Montana.....		Not	stated		
20	New Hampshire.....		1		1	
21	New Jersey.....	16	36	46	36	
22	New Mexico.....		2	5	4	
23	New York.....		Not	stated		
24	North Carolina.....	206	323	540	560	
25	North Dakota.....		Not	stated		
26	Ohio.....	78	67	55	131	
27	Oregon.....	8	4	11	10	
28	South Carolina.....	223	294	258	179	
29	Vermont.....		Not	stated		
30	Virginia.....	36	28	26	56	
31	Washington.....			14	3	
32	Washington, D. C.....	9	13	23	34	
33	West Virginia.....				25	
34	Wisconsin.....	28	4	2		
	Totals.....	1,506	2,005	2,522	2,705	

from 1920 to 1923 from Various State Boards of Health

NUMBER OF PERSONS GIVEN RABIES TREATMENT					NUMBER OF PERSONS DIED FROM RABIES				
1920	1921	1922	1923		1920	1921	1922	1923	
		519	586		1	1	2	0	1
180			100		0	0	3	1	2
	Not	stated			4	5	4	11	3
	8	16			0	0	0	0	4
8	10	12	4		0	0	0	0	5
102	268	242	329		2	1	0	1	6
1,461	2,147	2,476	2,082		3	5	1	0	7
29	37	49	17		1	1	0	1	8
	Not	stated			0	0	1	2	9
97	154	211	170		0	0	2	0	10
			259		0	0	0	0	11
	Not	stated			0	0	0	0	12
41	47	72	69		0	0	0	0	13
	Not	stated			0	3	5	1	14
85	62	47	46		0	0	0	0	15
21	8				0	1	0	0	16
155	483	717	739		1	0	0	1	17
	Not	stated			5	8	4	2	18
	Not	stated			0	0	0	0	19
	Not	stated			0	0	0	0	20
	Not	stated			1	1	1	3	21
	Not	stated			0	1	0	0	22
	Not	stated			2	1	0	1	23
473	643	855	1,108		1	1	1	1	24
	Not	stated			0	0	0	0	25
	Not	stated			1	3	2	4	26
	Not	stated			0	0	1	1	27
670	740	769	516		3	2	3	1	28
	Not	stated			0	0	0	0	29
20	52	46	56		0	1	3	2	30
5	5	10	7		0	0	0	0	31
	Not	stated			0	0	0	0	32
			30		0	0	0	4	33
3	3				0	0	1	0	34
3,350	4,667	6,041	6,118		25	35	34	37	

paralysis was noted to follow the vaccination, this might be attributed to the improper aging of the vaccine. However, this occurred only in very rare instances, not more frequently than paralysis develops after the administration of the Pasteur treatment, which may be estimated approximately at 1 in 10,000. It is natural that the usual antiseptic precautions in the administration of rabies vaccine should be followed and it is especially recommended that the full dose should not be injected at one point but should be divided and the inoculation made at least at two points and preferably even at three.

SUMMARY

The statistical data has definitely established a continuous increase of rabies in the United States. The number of persons required to take the Pasteur treatment offers sufficient proof of the necessity of straight measures to combat the disease. Efforts of control by quarantine and muzzling have not been successful.

A properly prepared vaccine proved to immunize dogs effectively against the disease for a period of at least one year. The results from vaccination, both in Japan and in the United States, have established the possibility of controlling rabies by prophylactic inoculation. In the localities where opposition exists against vaccination an educational campaign of the public should precede the requirement of compulsory vaccination.

DISCUSSION

DR. H. AMLING: I think we should adopt some method of asserting ourselves in reference to these things. Such statements as those being made by the Society for the Prevention of Cruelty to Animals are misleading and do us a great deal of harm. Such information is detrimental to the welfare of the community and the public at large. There were cases not long ago where they showed the condition was caused by ground-glass poisoning. It is almost impossible for any one to administer ground glass, and the veterinarian in attendance would very soon know the condition.

■ DR. J. I. GIBSON: The doctor here has sounded a keynote, I think, for more decisive action on the part of this Association. There ought to be some way to prosecute, in this country, any society that wilfully and determinedly goes before the public with false propaganda. Some of you may have seen the little printed folder, knocking on the work of eradicating tuberculosis in this country, put out by some liberty league—I don't know the name just now, and I haven't the copy with me—but that circular is practically all false. It is a combination of falsehoods. I sent a copy to the Bureau of Animal Industry and asked them to inquire of the post office as to why such falsehoods were permitted circulation through the mails of the United States. If it did not do any other harm than to block the work of the veterinarian it wouldn't be so serious; that is bad enough; it is only a commercial reverse, but it is doing great harm to the people of the United States. It is retarding the progress along all of these lines, and it does seem to me that there ought to be a way to punish people who circulate falsehoods along these lines. I really think that the American Veterinary Medical Association might well, in its resolutions, consider seriously this proposition and call a halt to the continued circulation of false statements about various lines of progress.

DR. E. E. PATTERSON: In the city of Detroit we have had a lot of propaganda about the seriousness of the effects of the vaccine. The newspapers have given us a lot of good publicity and they have given us a lot of bad publicity. However, I think that these wrong statements should be considered.

In the first place I was fortunate enough to be called upon to vaccinate, in the past summer, some 1,200 dogs. I am sorry to say that I have not had the best of results. I hope that I am not going to throw a monkey-wrench into the machinery, gentlemen, or that I am going to hurt the interests of the profession or the benefits of the vaccination of dogs, but the main question at issue, I believe, is the question of whether we have in the five-cc treatment a prophylactic treatment. That is the most important question which has been confronting me.

I have had about 100 cases returned after the vaccination. I have had about forty or fifty cases of posterior paralysis in the dogs, which would not have happened had they not been vaccinated. I have also had about ten or fifteen cases of symptomatic rabies, from the vaccination, I think. I don't want to go on record and say that it was a positive fact that they were symptomatic rabies, but that is what they appeared to be.

These are some of the conditions which I have encountered. Possibly Dr. Eichhorn can assist me in clearing up some of these things, and I sincerely hope he will do so.

DR. M. F. BARNES: The Japanese experiment would indicate that it is 100 per cent perfect, but I would like to cite one instance only. I don't know what vaccine was used or how it was prepared, but the work was done at the Radnor Hunt of Pennsylvania. Thirty dogs were injected in October, 1923. Since October, 1923, our laboratory has diagnosed nine cases of rabies out of the thirty dogs that were vaccinated by the single-injection method, so I do not believe we should go too fast. Of course, we have the Japanese figures, but nine out of thirty, as in the case referred to above, is a very high percentage.

DR. PATTERSON: I just want to add that we used four different makes of vaccine.

DR. T. E. SMITH: I have had a little experience with rabies vaccine. I am sorry that I didn't hear all of the remarks of the doctor here, but I gathered from what little I did hear that he had some disagreeable experiences with it.

Extending over a period of about a year, I have vaccinated approximately 150 dogs, and with the exception of two or three of those cases, they have been dogs which had bitten somebody. We have no general ordinance governing that, only a rule of the Board of Health, that where a dog has bitten a person, and complaint is made of it, he is surrendered to the health authorities. I hold the dog under observation for anywhere from seven to twenty-one days, and if the owner then wants to redeem him he must have the dog vaccinated.

Out of about 150 cases I haven't had one returned that had symptoms of paralysis. I had one or two disagreeable experiences with abscesses, which I attributed to my own technic. In other words, I did not properly introduce the vaccine; that has been my experience with it. I know of men in my end of the state, who have used approximately 1,000 doses, and I meet them, probably once a month or twice a month, and they have not reported, as yet, experiences as I have heard here.

DR. J. T. GLENNON: I happen to be from the state of New Jersey where there is a lot of feeling against vaccination and, in talking to Dr. Smith, who has inoculated 150 dogs, he has not had one dog come down with the disease, and he has not had one dog that showed any bad after-effects.

DR. EICHORN: I do not want to leave the impression that the purpose of my address has been to make a propaganda in favor of vaccination. I simply wanted to point out to you the facts about the status of rabies in the United States and the results which have been so far obtained with prophylactic vaccination. You can draw your own conclusions; take everything into consideration and decide whether the method is satisfactory or not.

With reference to the statement of Dr. Patterson, I am indeed very much surprised, as his apparently unfavorable results following the vaccination are the first which came to my attention. I have corresponded with veterinarians in all parts of the United States. For instance, in Los Angeles County they

vaccinated thousands of dogs and I have not heard of any paralysis developing following the vaccination. I have also discussed rabies vaccination with veterinarians in various parts of the East. I know of veterinarians who vaccinated from 1,000 to 1,500 dogs without any bad results whatever following the vaccination. A vaccine properly administered should not produce bad results.

With regard to his statement on the development of symptomatic rabies, there must be some mistake. He states that he had 10 or 15 cases of symptomatic rabies following the vaccination. I do not know just what he means by symptomatic rabies. If he means that the dogs disclosed symptoms of rabies and are not actually affected with the disease, this might have been incidental to other conditions than vaccination. If on the other hand they were actually affected with rabies and disclosed symptoms of the disease then they must be considered as actual cases of rabies.

The case which Dr. Barnes referred to was brought to my attention by Dr. Lentz of Philadelphia and I am only sorry that Dr. Barnes has not been informed of all details with regard to this case. From my recollection these 30 dogs were exposed to the infection through the intrusion of a rabid dog. Subsequently they were vaccinated by the single injection method. Following the vaccination cases of rabies developed in these animals until in all nine of the dogs developed rabies. About that time Dr. Lentz was consulted with regard to these cases and he recommended that the animals be vaccinated by the six-injection method which was actually done. It appears, therefore, evident that these thirty dogs were exposed to the disease and following the exposure they were vaccinated with the single-injection method. I am not at all surprised that rabies developed among these dogs inasmuch as the single injection will not in all cases prevent the development of rabies in actually exposed dogs. The single-injection method is recommended primarily for prophylactic purposes and not for animals which are already exposed to the disease.

DR. BARNES: Dr. Eichhorn said that I misrepresented the case. I stated that I did not know anything about the dogs except that I knew they were treated by the single-injection method, and our laboratory diagnosed rabies in nine cases out of the thirty that were injected in October, 1923. The last case was diagnosed about three weeks ago. I think Dr. Lentz gave the treatment about that time with the six-injection method.

DR. EICHHORN: It was not my intention to insinuate that Dr. Barnes misrepresented the case. I only desire to call attention to the fact that from his description it appeared that these animals were given the prophylactic vaccination, whereas they actually were already exposed when given the single-injection treatment.

DR. PATTERSON: Feeling that Dr. Eichhorn is honest in his purpose and convictions, I would like to ask him if he feels that the five-cc injection of vaccine—the single-injection method—is enough to immunize a dog against rabies, and how long before the immunity is established, after the injection.

DR. EICHHORN: Our knowledge of rabies vaccine is quite extensive and has been gained through investigations and studies in all parts of the world. It is accepted that the maximum immunity develops in from nineteen to twenty-one days after the vaccination. With regard to the single injection for a dog, we have experimental evidence, both in this country as well as in Japan. The experiments in Japan were controlled by the government. In this country they have been carried out in different institutions and they have proved that a single injection of rabies vaccine will effectively protect a dog against positive artificial infection. We know that much. We know further that experiments which were carefully controlled by the government in Japan proved that out of hundreds and thousands of dogs only forty-one contracted the disease and most of these were exposed when vaccinated. That is all we can expect. We cannot hope to popularize vaccination if we remain skeptical in the face of the conclusive results obtained from the vaccination. We must accept the experimental evidence and also the practical experience and that is the only way we can start a movement towards controlling rabies by vaccination. If we do not want to vaccinate, then let us discard it. But if we do want to vaccinate then let us accept what has been done both in a practical way and also in an experimental way.

AN OUTBREAK OF PARATYPHOID DYSENTERY IN LAMBS¹

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THE OUTBREAK

The northern lambs arriving in the Fort Collins feeding district, between Oct. 10 and Oct. 14, 1923, inclusive, showed such a large percentage of dysentery that it seemed wise to make some investigation as to the cause. A study revealed that a lot, of approximately 10,000, was shipped from Norris, Mont., on Sept. 28, arriving in Billings the next morning. These lambs were routed direct to Fort Collins over the Burlington and C. & S., but, owing to a washout on the line, it was necessary to hold them in the yards at Billings until Oct. 7, a period of nine days.

During this time it rained almost daily and, according to reports, the facilities for handling the lambs at Billings were not all that could have been desired. While still there, many of them developed diarrhea and a few died. They were finally shipped to Fort Collins through Alliance, Neb., showing a loss in transit of something like 50 head. After arrival, the deaths continued, so that the total loss in this particular lot was 250 (2.6%). Owing to continued rains and washouts on the road, it was necessary to ship all of the northern lambs that came into Fort Collins, through Alliance.

The second lot was loaded out of Chinook and Assiniboine, Mont., on Oct. 4; was fed at Great Falls, Sheridan, and Alliance; and arrived in Fort Collins on Oct. 11. In this lot of nearly 5000, the loss was 158 (3.2%). The third lot of 5200 head was loaded at Cody, Wyoming; was fed at Billings and Alliance; was five days on the road and showed a total loss of 400 head (7.7%). The fourth lot of 7500 head was loaded at Edgar, Mont., on the 10th; a part of them were fed at Sheridan and the rest went through to Alliance. These arrived at Fort Collins on the 14th, showing a final loss of 857 (11.9%). The fifth and last lot of the outbreak was loaded at Kane and Lovell, Wyo.,

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on the 9th; was fed at Billings and Alliance, and arrived in Fort Collins on the 14th. This consisted of 4500 head, and showed a final loss of 6.2%.

Lambs continued to come into the district over this route for the next two weeks, but as far as our knowledge goes, no other lambs developed the disease which affected these five lots. The total number of lambs involved in the outbreak was 31,369, with a loss of 1946 (6.2%). (Table I.)

TABLE I—*Paratyphoid Dysentery in Lambs—1923*

	ORIGIN AND MOVEMENTS		LOT	NUMBER	LOSS	%
A	Norris, Mont.	9-23	1	573	35	2.6
			2	1501	70	
			3	1073	25	
	Billings	10-7	4	2998	65	
	Alliance	10-9	5	2234	15	
	Ft. Collins	10-10	6	1200	40	
				9579	250	
B	Chinook, Mont.	10-4				3.2
	Assiniboine, Mont.	10-5				
	Great Falls	10-5	1	300	25	
	Sheridan	10-8	2	2190	77	
	Alliance	10-10	3	1200	37	
	Ft. Collins	10-11	4	1200	19	
				4890	158	
C	Cody, Wyom.	10-10				7.7
	Billings	10-11	1	4000	150	
	Alliance	10-13	2	1200	250	
	Ft. Collins	10-15		5200	400	
D	Edgar, Mont.	10-10	1	900	43	11.9
			2	1200	0	
	a { Sheridan	10-11	3	1500	200	
	a { Alliance	10-13	4	1500	274	
	a { Ft. Collins	10-14	5	1200	200	
			6	900	140	
	b { Alliance	10-12				
	b { Ft. Collins	10-14		7200	857	
E	Kane, Wyom.	10-9	1	600	33	6.2
	Lovell, Wyom.	10-9	2	900	22	
			3	1200	19	
	Billings	10-10	4	1200	87	
	Alliance	10-12	5	600	120	
				4500	281	
	Ft. Collins	10-14				
Totals				31,369	1946	6.2%

SYMPTOMS

The affected lambs showed considerable dullness, weakness, and disinclination to move about. The head hung, the ears drooped, and the abdomen was tucked up; they appeared gaunt, refused food, and finally the worst affected got down and were unable to rise. There was a thin, watery, offensive discharge from the bowels, that in many instances was stained red with blood. Evacuations were made frequently without any considerable straining. The temperature in the early stages was elevated, the highest one taken being 105.6° F. Later, however, the temperature fell to normal, and previous to death even went below.

Some of the lambs died within 24 hours after they were noticed to be ill, whereas others survived for two or three weeks. Many lambs were noticed to be ill on arrival, and others did not develop the disease until three or four days afterward. However, in practically all cases the disease had passed its crisis by the end of the first week, and practically all losses occurred within the first ten days or two weeks after arrival in the pens. No very accurate records were obtained on the number of recoveries, but it is reasonable to believe that as many as 30% showed symptoms of the disease, so that four times as many recovered as died.

LESIONS

The lesions were chiefly confined to the fourth stomach and the small intestines, and consisted of an extreme reddening of the mucous membranes of these organs, due apparently to a very acute inflammation. The stomach and intestinal contents were frequently stained red or black, due to the escape of blood from the walls of the organs. Out of some 50 animals posted, only three showed disease of the lungs, and in these the solidification was confined to a small area in the dependent portion of one lobe.

TREATMENT

In all cases seen by the writers, the owner was advised to turn the lambs out on stubble, where they would have free range, with a view to preventing the concentration of infection which occurred in the pens. It was recommended that the drinking water be saturated with lime, and that those most affected be confined in separate pens and given individual treatment.

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The treatment suggested was a small dose of castor oil, followed by intestinal antiseptics. Where these directions were followed, the losses seemed to be smaller than where no heed was taken. As an example in No. 2, lot C, and No. 4, lot D, the lambs were confined in the pens with no particular attention being given, even the dead being allowed to remain in the pens for as much as a week. We believed we saw direct relation between this lack of care and the extreme losses in these two pens.

CAUSE

From all of the lots visited, tissues were selected from which plates were made on ordinary beef-infusion agar. After twenty-four hours, colonies were selected and transferred to agar slants. Plates were thus made from spleens gathered from ten different lots, from the fourth stomachs of seven, and from the intestines of three. An organism of the paratyphoid B group was isolated from seven of the spleens, from three of the stomachs, and from all three of the intestines. Thus, out of the ten lots studied, nine cultures of this organism were obtained. The characteristics of the organism, determined from each culture separately, are shown in table II.

Rabbits were inoculated intraperitoneally with spleen emulsion from seven of the lots, and with lung emulsion from three. While the three lungs were selected because they showed a small

TABLE II—Characteristics

STRAIN	DEXTROSE		LACTOSE		SUCROSE		MANNITOL		XYLOSE		DULCITOL		SALICIN		LEVULOSE		ARABINOSE	
	A	G	A	G	A	G	A	G	A	G	A	G	A	G	A	G	A	G
164	+	+	—	—	—	—	+	+	+	+	+	+	—	—	+	+	+	+
12	+	+	—	—	—	—	+	+	+	+	+	+	—	—	+	+	+	+
404	+	+	—	—	—	—	+	+	+	+	+	+	—	—	+	+	+	+

164 = Sheep; 12 = Schottmuller; 404 = Aertrycke.

area of solidification, yet in only one instance was an organism of the hemorrhagic septicemia group isolated.

Having traced the organism into the paratyphoid B. group, the next question was to determine whether it belonged to the Schottmuller or Aertrycke type. According to the new *Determinative Bacteriology* (Bergey), this differentiation may be made on the basis of the fermentation of dextrin. This sugar we tried over and over again, and found the results so contradictory that we have eliminated that part of the work from this report.

We did, however, obtain from Professor Jordan his No. 12, a representative of the Schottmuller type, and No. 404, a typical Aertrycke. From these and from No. 164, a typical culture of our own, we prepared agglutinating serums and ran them against all of our cultures. We used the usual absorption technic described by Spray,¹ except that we diluted the serum 1-10 instead of 1-15. The results are given in tables III and IV.

AGGLUTINATION TESTS

After the outbreak had subsided, blood was drawn from lambs that were thought to have recovered from the disease, in several of the lots, and agglutination tests run, using as antigen a mixture of the cultures we had isolated. The results are given in table V.

From these data it is observed that 12 (Schottmuller) serum, when unabsorbed, agglutinated 404 (Aertrycke) and 164 (sheep)

of the Organism

RHAMNOSE		MALTOSE		GALACTOSE		DEXTRIN		INOSITOL		LITMUS MILK	H ₂ S	INDOL	GELATIN	GRAM	MOTILITY	STRAIN
A	G	A	G	A	G	A	G	A	G							
+	+	+	+	+	+	+	+	+	+	Acid; then alk.	+	—	—	—	+	164
+	+	+	+	+	+	+	+	+	+	Acid; then alk.	+	—	—	—	+	12
+	+	+	+	+	+	+	+	+	+	Acid; then alk.	+	—	—	—	+	404

very slightly, indicating at the outset a difference in these organisms. 404 serum agglutinates 164 as strongly as itself, but 12 not at all. 164 clumps 404 as strongly as itself, which is to be expected, but also agglutinates 12 at a very high dilution but incompletely.

Now when 12 serum is absorbed by 404, it agglutinated itself as much as before but has no agglutinins for 164. When absorbed with 164 it has no agglutinin left even for itself.

When 404 serum is absorbed with 12, it agglutinates itself and 164 as strongly as ever. When absorbed with 164, it loses the agglutinin both for 164 and itself.

TABLE III—*Agglutination with Unabsorbed Serum*

SERUM	ANTIGEN	1-100	1-500	1-1000	1-5000
12	12	XXXX	XXXX	XXXX	....
	404	X	....	....	....
	164	XX	....	....	....
404	404	XXXX	XXXX	XXXX	XX
	12	....	....	....	....
	164	XXXX	XXXX	XXXX	XX
164	164	XXXX	XXXX	XXXX	....
	404	XXXX	XXXX	XXXX	....
	12	XXXX	XX	XX	....

When 164 serum is absorbed with 12, it still agglutinates 404 and itself as high as ever, but loses its 12 agglutinin. When absorbed with 404, it loses all of its agglutinin, even that for 12.

Thus it will be seen that, while 164 (our sheep culture) is more closely related to 404 (Aertrycke), it also completely absorbs the agglutinins specific for 12 (Schottmuller). Thus, while we may class it as an Aertrycke type, it really occupies an intermediate position.

PATHOGENICITY

Three rabbits, given 0.1, 0.5 and 1.0 cc of a mixture of forty-eight-hour bouillon cultures, by the mouth, showed no symptoms. Three guinea pigs, given the same dosage, showed no response. Two-tenths cc intraperitoneally destroyed a rabbit in five days.

One-tenth cc intraperitoneally destroyed a guinea pig in twenty-four hours. Pathogenicity for sheep will be discussed later.

It will be seen that, out of the twenty-six lambs tested, all showed agglutinins, at a dilution of 1-25, except five, some running as high as 1-500. It seems probable that these five that showed no agglutinins never had the disease.

TABLE IV—*Agglutination with Absorbed Serum*

SERUM	ABSORBED BY	ANTIGEN	1-100	1-500	1-1000	1-5000
12	12	12	—	—	—	—
		404	—	—	—	—
		164	—	—	—	—
	404	12	+	+	+	—
		404	—	—	—	—
		164	—	—	—	—
	164	12	—	—	—	—
		404	—	—	—	—
		164	—	—	—	—
404	404	12	—	—	—	—
		404	—	—	—	—
		164	—	—	—	—
	12	12	—	—	—	—
		404	+	+	+	—
		164	+	+	+	—
	164	12	—	—	—	—
		404	—	—	—	—
		164	—	—	—	—
164	12	12	—	—	—	—
		404	+	+	+	—
		164	+	+	+	—
	404	12	—	—	—	—
		404	—	—	—	—
		164	—	—	—	—
	164	12	—	—	—	—
		404	—	—	—	—
		164	—	—	—	—

To determine whether normal animals carried specific agglutinins in their blood, we tested twelve normal sheep from the college flock, with entirely negative results, in dilutions from 1-10 to 1-1000.

PREDISPOSING CAUSES

As stated above, the conditions of shipping were very unusual, owing to the bad weather that prevailed during this

period. The lambs were accumulated at shipping points where, owing to the breakdown in transportation, cars were often slow

TABLE V—*Agglutination Tests of Blood of Recovered Lambs*

LOT	DATE	LAMB	DILUTIONS						
			1-10	1-25	1-50	1-100	1-250	1-500	1-1000
B-2	10-31	1	+	+	+	+	+	—	—
		2	+	+	+	+	+	+	—
		3	—	—	—	—	—	—	—
		4	—	—	—	—	—	—	—
		5	—	—	—	—	—	—	—
B-4	10-31	1	+	—	—	—	—	—	—
		2	+	+	+	+	+	+	—
		3	+	+	+	+	+	—	—
		4	+	+	+	+	+	+	—
		5	+	—	—	—	—	—	—
C-2	10-28	1	+	+	+	+	+	+	—
		2	+	+	+	+	+	+	—
		3	+	+	+	+	+	+	—
		4	+	+	+	+	+	+	—
		5	+	+	+	+	+	+	—
		6	+	+	+	+	+	+	—
D-1	10-29	1	+	+	+	+	+	+	—
		2	+	+	+	+	+	—	—
		3	+	+	+	+	+	+	—
D-3	10-31	1	+	+	+	+	+	+	—
		2	+	+	+	+	+	—	—
		3	+	+	+	+	—	—	—
		4	+	+	+	+	+	+	—
		5	+	+	+	+	+	+	—
E-1	10-28	1	+	+	+	+	—	—	—
		2	+	+	+	+	—	—	—

in arriving. After being loaded, they were then many hours on the train without feed. At the unloading points, the rain continued, and the mud was deep in the pens, and consequently, even though they were fed, unless the hay was put into mangers, it was tramped into the ground and was not entirely consumed.

Special attention is called to lot D. This lot is separated into two divisions, a and b, because, while they originated at the same point and were shipped on the same day, they came from different ranches and were handled in a different manner. Lot b was held at Edgar, Mont., for two days previous to loading. During this time, according to our best information, there was practically no feed. They were then loaded and shipped to Alliance, Neb., where they were unloaded for feeding, having been on the cars five hours longer than the usual allowance. This lot then had gone practically four days without food. Lot a came into Edgar just as lot b was leaving and was immediately loaded on the cars, was fed at Sheridan and then at Alliance, and finally came through, arriving at Fort Collins on the same day as lot b. The loss in lot b was 16%, whereas in lot a it was only 2%. Altogether it seemed that weather and feeding conditions incident to shipping were a large factor in the production of the disease.

RELATION TO FASTING

Having isolated an organism of the paratyphoid B. group from a number of these lots, and having shown that it would reproduce the essential symptoms and lesions of the disease, we set up the following experiment to determine the relation to fasting.

It will be seen by reference to table VI that three yearling lambs, weight about 80 lbs. each, were taken for the first test. Two of these were fasted for 48 hours, and the other was allowed alfalfa hay at liberty. At the end of the 48-hour period, one of the fasted animals and the one given the usual food were given, by the mouth, 50 cc of a 48-hour bouillon culture of the suspected organism. The other fasted animal was given no culture, and all three animals were then allowed to eat alfalfa as they wished. The fasted lamb that was given the culture was noticed to be sick on the second day, showing the typical diarrhea and weakness associated with the original disease, and dying on the fifth day. Neither of the other lambs showed illness.

Having exhausted our left-over stock of lambs from the

previous year, we purchased several culls, averaging from 30 to 40 lbs. each. The experiment was repeated, using these lambs rather than older and stronger ones of the previous experiment. It terminated in the same way, except that the lamb that was fed as usual sickened on the fourth day and was killed on the 22nd day because it had been in a moribund state for some time. This seemed to indicate that our dosage was so heavy

TABLE VI—*Relation to Fasting*

EXPT.	LAMB	FASTED	CULTURE	RESULTS
I	1	48 hrs.	50 cc	Sick 2nd day; died 5th
	2	48 hrs.	None	Lived; no illness
	3	Fed as usual	50 cc	Lived; no illness
II	1	48 hrs.	50 cc	Sick 2nd day; died 4th
	2	48 hrs.	None	Lived; no illness
	3	Fed as usual	50 cc	Sick 4th day; killed 22nd
III	1	48 hrs.	1 cc	Sick 4th day; lived
	2	48 hrs.	5 cc	Sick 4th day; died 12th
	3	48 hrs.	10 cc	Sick 4th day; died 21st
IV	1	24 hrs.	30 cc	Sick 4th day; died 6th
	2	48 hrs.	30 cc	Sick 2nd day; died 5th
	3	72 hrs. (watered)	30 cc	Sick 2nd day; died 4th
	4	72 hrs. (watered)	30 cc	Sick 3rd day; died 4th
	5	72 hrs. (watered)	None	Lived; no illness
	6	Fed and watered as usual	30 cc	Lived; no illness

that, in small lambs at least, the disease was produced even though the animal was fed.

Consequently, experiment III was set up purely to determine what the lethal dose was in lambs of this size. In this, three lambs were fasted for 48 hours and then given 1, 5, and 10 cc of the 48-hour bouillon culture respectively. All three sickened on the fourth day. Lamb 1 recovered after a few days' illness. Lamb 2 died on the 12th day, and lamb 3 on the 21st day. We judged from this that if lambs are between 30 and 40 lbs., and have been fasted for 48 hours, the lethal dose is about 5 cc.

Consequently, we set up experiment IV, using, at this time, a 30-cc dosage instead of 50 cc as in the previous experiment. In this experiment, lamb 1 was fasted for 24 hours, lamb 2 for 48 hours, and lamb 3 for 72 hours; lamb 4 for 72 hours, but was given water, whereas in all previous experiments water was withheld as well as food. Lamb 5 was also fasted for 72 hours, and lamb 6 fed and watered as usual. Lamb 1, having been fasted for only 24 hours, became sick on the fourth day and died on the sixth. Lamb 2, fasted for 48 hours, sickened on the second day and died on the fourth. Lamb 4, watered but not fed for 72 hours, sickened on the third day and died on the fourth. Lamb 5, fasted for 72 hours, but given no culture, lived and showed no illness. Lamb 6, fed and watered as usual and given the same culture as the first four, lived and showed no illness.

This experiment seemed to show quite conclusively that animals fed as usual would withstand at least six times the lethal dose of the organism as compared with lambs fasted for 48 hours, indicating that fasting rendered the lambs much more susceptible to the disease. It also showed that lambs could withstand a very large amount of the culture if they were fed as usual. This work, taken in connection with the history of the original cases, forces us to the conclusion that fasting during transit was a large factor in the development of the original malady.

RELATION TO FOOD POISONING

Since *B. paratyphosus* B. is a Gäertner organism and has been incriminated in many outbreaks of food poisoning in man, this brings to mind the possibility of food poisoning from mutton. Our authorities are practically unanimous in asserting that mutton has not been involved in cases of meat poisoning. Only one outbreak, so far as our search goes, is attributed to mutton, and even in that there is a possibility that veal was the original cause.² If this disease should continue, and we are of the opinion that it has been overlooked in the past, and if this is in reality a food-poisoning organism, it may be that future outbreaks of food poisoning will be traced to mutton.

SUMMARY

An outbreak of paratyphoid dysentery, involving over thirty thousand lambs, with a loss of approximately two thousand, is described. An organism of the paratyphoid B. group, Aerttrycke

type, was isolated. With this organism, the disease was reproduced in normal lambs. Fasting was shown to be an important predisposing cause.

REFERENCES

¹Spray: Jour. Inf. Dis., xxvi, p. 340.

²Allen and Dawson: Lancet, 1922.

DISCUSSION

DR. EICHHORN: I believe that this is a splendid piece of work with regard to this particular infection. It is especially important inasmuch as paratyphoid in sheep has, as far as I know, never been recognized, and furthermore, sheep diseases have not been given the consideration which they deserve.

I think that the carefully prepared experimental work in this paper is very commendable; it proves that the experiments were conducted in a very thorough manner, and no loophole is left open for any criticism. It also suggests the importance of veterinarians being on the lookout for infections of this type.

Paratyphoid in the human family is now recognized as one of the important infections, and in animals it has not been given the recognition which it should have, due to the lack of observation and study.

There is one thing I would like to know, and that is, at what time after recovery of these lambs or sheep did you take the blood for the agglutination tests?

DR. NEWSOM: In answer to Dr. Eichhorn's question, I might say that this blood was taken from the 27th to the 31st of October. The outbreaks occurred approximately two weeks previously.

ANOTHER IMPOSTOR REPORTED

From Dr. C. A. Pleuger, of Cincinnati, Ohio, we have received a report to the effect that an impostor has been working in that vicinity. This party has represented himself as Dr. H. Colebourn, of Winnipeg, Canada. The following description of the party is given, in the hope that veterinarians may recognize him if he should attempt to get a check cashed, as this appears to have been his particular line of endeavor:

Age—50 years

Height—5 feet 10½ inches

Hair—Grayish to sandy

Accent—English to Irish

Wears glasses, wears grayish suits, one belted, one plain, and tan shoes.

This swindler is reported to have worked for Dr. Colebourn, at his hospital in Winnipeg, about two years ago, and has assumed the name of his former employer in plying his nefarious trade. The real Dr. Colebourn gives the former name of the impostor as Robert Scott.

Watch out for this rascal.

PRENATAL INFESTATION OF FOX PUPS WITH BELASCARIDS¹

By F. B. HADLEY, B. L. WARWICK and E. M. GILDOW

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Belascaris marginata is the scientific name of the common round worm that so frequently is found in the intestines of the fox. This animal parasite has an interesting life history, passing through four distinct stages, viz., the egg, embryo, larval, and adult worm stage.

The importance of this parasitic worm is well known to every breeder of foxes, for few, if any, have succeeded in eradicating it completely from their ranches. This fact has been responsible for the routine practice of treating each fox pup with a vermifuge capable of removing the worms.

Although the presence of a few round worms in the bowel may cause little damage, it is known that many worms are responsible not only for unthriftiness and digestive disturbances, but also may cause the death of young animals by masses of the worms obstructing the bowel and the bile duct. Moreover, it has been recently discovered that the larvae of the round worm, as will shortly be demonstrated, pass through the wall of the intestine, enter the blood stream and are carried to the lungs where they produce irritation and pneumonia, thus taxing the vitality, retarding both growth and development, and paving the way for infection with germs of other diseases. Accordingly all fox breeders and veterinarians should be interested in anything new that has been learned relative to this enemy of the fox.

Until 1916 it was believed that animals became infested with this and other ascarids by means of eggs taken into the digestive canal and developing there. In that year, however, Stewart² made an observation on mice and rats fed ascaris eggs that changed our ideas. He was able to demonstrate the larval stage in the liver and lungs of his experimentally infested animals. Moreover, he found, that the lung forms were larger than the embryo, that they ascended the trachea, were swallowed and passed out in the feces. Although his hypothesis that the rat and mouse act as intermediate hosts of the ascarid in man has

¹Presented at the sixty-first annual meeting of the American Veterinary Medical Association, Des Moines, Iowa, August 19-22, 1924.

been disproved, the work was a valuable contribution to our knowledge of this parasitic enemy of foxes, pigs, dogs, and certain other animals, as well as of man.

In 1920 Ransom and Foster⁶ showed that the embryonated ascarid eggs hatch in the intestines and the young larvae pass through the walls of the intestines, enter the blood stream and are carried in the portal circulation to the liver. From here they pass into the hepatic vein, are carried to the right side of the heart, and thence to the lungs where they stay a few days and become 5 to 10 times as long as the newly hatched larvae. In the lungs they produce an ascarid pneumonia. Eventually they wriggle their way into the air passages, pass up the trachea, into the mouth, and are swallowed. After arrival in the intestines some of the young worms pass out in the feces and perish, but others remain and grow rapidly, eventually developing into adult ascarids.

The conclusion arrived at by Yoshida⁹ was that the larvae penetrated the intestinal wall, entered the body cavity and then penetrated the liver, but this belief has not been substantiated by other workers, who think that the larvae which he (Yoshida) found in the body cavity were wanderers and out of the usual tract of migration. It is true, however, that the larvae occasionally travel by other routes than that of the liver, for they have been found, in experimentally infected animals, in the lymphatics, spleen, pancreas and kidneys. Moreover, while it is possible to induce ascaris pneumonia by injecting embryonated eggs subcutaneously, it is believed that natural infection only occurs through the swallowing of the eggs, or, in the case of the fetus, by passage of the larvae across the placenta in the manner shortly to be described.

Koino's very graphic account of the serious disturbance which he experienced following the intentional swallowing of several hundred ascarid eggs is illuminating and indicates that the life history of this parasite in man is similar to that in animals experimentally fed embryonated eggs.

All the work that has been referred to demonstrates conclusively that the ascaris has a direct life history and that no intermediate history is necessary. It also shows that the newly hatched worms do not immediately establish themselves in the intestine and grow to maturity, but first leave the intestine and pass through the various organs already mentioned, eventually to return to their place of birth and final habitat.

Speculation has been rife regarding the exact way that, and time, when ascarid infestation occurs. That many animals become infested after birth is certain. We believe, however, that some animals become infested before birth. The latter possibility was suggested to the senior writer² by the observation of Jeffreys¹ that the fox pup must acquire all the larvae it harbors at, or nearly, the same time, because the worms in any one pup are nearly all the same length, according to their sex, varying only two centimeters from the average. Commonly the intestines of three- to four-weeks-old fox pups are found completely filled with half-grown worms which is too short a time for the worms

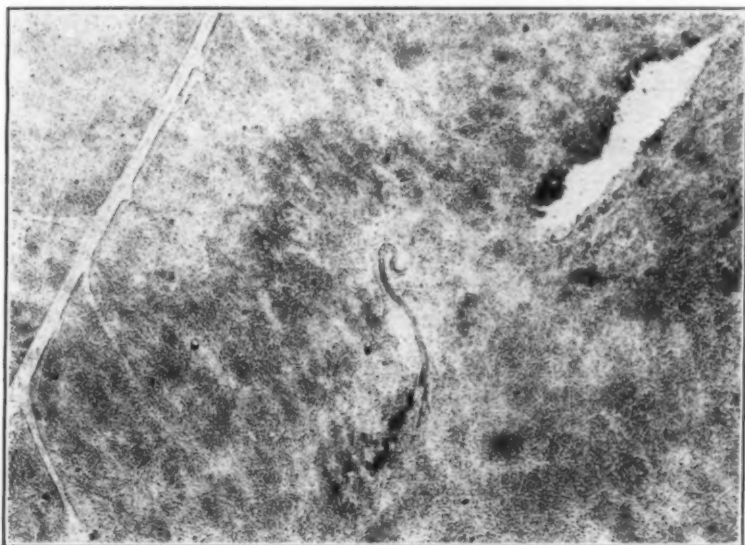


FIG. 1—*Belascaris* larva in lung of newborn fox pup. The discovery of this worm has cleared up a vexing problem and made it possible materially to reduce the death rate.

to have reached this stage of development if infestation occurred after birth. These facts tend to disprove the prevailing belief that the eggs are always taken with the food and drink.

Füllerborn¹ has published the results of an experiment in which he produced prenatal infestation of puppy dogs by injecting under the skin of a pregnant bitch thousands of embryonated *Belascaris* larvae obtained from the liver of an experimentally infested guinea pig. He was able to demonstrate the larvae in various organs of the pups.

Shillinger and Cram⁷ went even further and produced prenatal infestation by feeding embryonated *B. marginata* eggs to a

bitch in advanced pregnancy. Eight days after feeding, twelve puppies were born, eight being dead at birth or dying shortly afterward, and the four remaining died the following day. Of the twelve puppies eight were found to harbor the larval belascaris, six in the liver, one in the lungs and one in both liver and lungs. These observations show that the larvae may pass the placental filter of the bitch.

Our interest in this problem is the result of appeals from the fox farmers of Wisconsin for aid in reducing the exceedingly high death-rate in newborn fox pups, amounting to 30 or 40 per cent on many ranches this season. It seemed to us that some of these pups may have succumbed directly to infestation with belascaris that entered their bodies before birth, or to secondary infections that gained entrance to the tissues through the wounds made by wandering larvae.

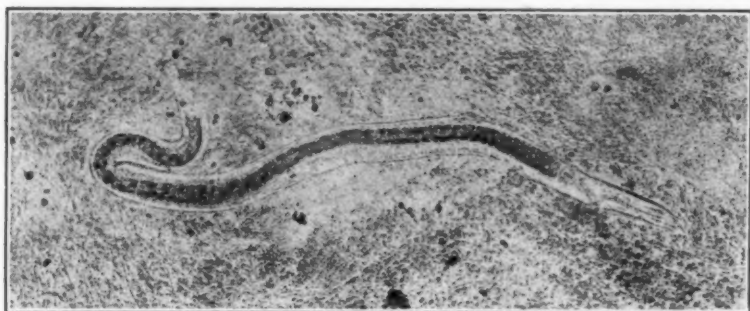


FIG. 2.—*Belascaris* larva in lung of newborn fox. Same specimen as shown in fig. 1 but more highly magnified.

In order to prove or disprove this assumption, letters were written to several fox farmers requesting the carcasses of newborn fox pups for examination. Fortunately one of the men who complied with our request happened to be a physician and a man who appreciates scientific work. The first carcass received from him was that of a pup which he was positive had never nursed. Upon microscopic examination of the intestinal contents no evidence of larvae was found. When small bits of the lung tissue were pressed between glass plates and were subjected to microscopic study we succeeded in demonstrating a number of well-developed *Belascaris* larvae. Figures 1 and 2 are photographs of one of these specimens, under different degrees of magnification.

Several of these larvae were carefully measured and found to

be about 1.07 mm. in length and 0.063 mm. in maximum thickness. The newly hatched larvae of this species measured from 0.19 to 0.26 mm. in length. One embryonated and two infertile eggs of the *B. marginata* are shown in fig. 3. It should be noted that these eggs are globular in shape and smooth, instead of oval and mammillated, as are ascaris eggs. In table I are presented measurements that bring out the comparative differences between the common round worm of the pig and that of the fox. This table should be found helpful in identifying specimens.

We feel safe in concluding that the larvae in the lungs of the pup under discussion must have been several days old, as they

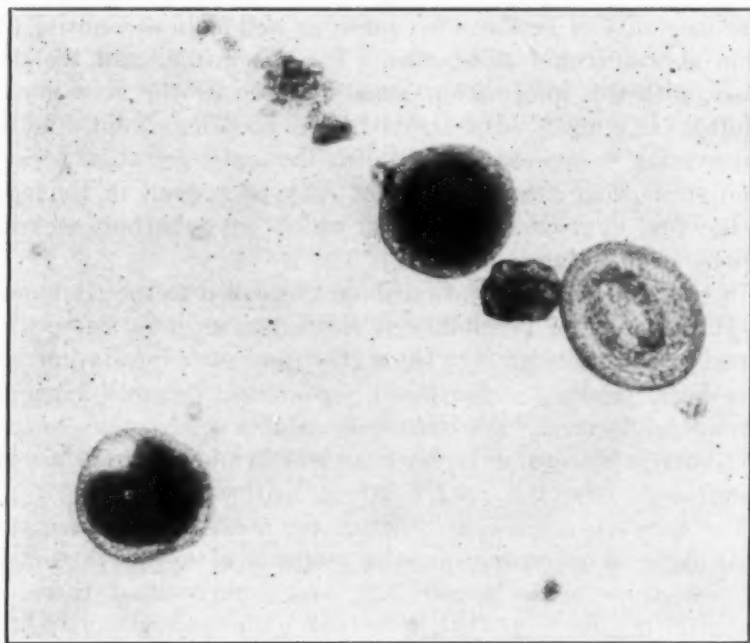


FIG. 3—*Belascaris marginata* eggs. Two of these eggs are infertile; the other shows a fully developed embryo coiled within the shell. Magnified.

had increased five times in length. In other words, a number of days must have elapsed after the original infestation of the pup, as it is evident that there is a general increase in size with the lapse of time and with the progress of the larvae through the various organs. Consequently it is certain that the pup became infested prenatally.

This discovery is of considerable scientific interest from the fact that it is the first report of natural prenatal or intrauterine

TABLE I. *Comparison of Belascaris marginata with ascaris suum*

NAME	ADULT FEMALE	ADULT MALE	SHAPE OF EGGS	NEWLY HATCHED LARVAE	LARVAE FROM LUNG
<i>A. suum</i>	8-12 in.	6-7 in.	Oval	0.2-0.3 mm.	ca. 1.43 mm.
<i>B. marg.</i>	3½-5½ in.	2-4 in.	Globular	0.19-0.26 mm.	ca. 1.07 mm.

infestation with *Ascaris* larvae. It also establishes a fact that has been surmised but never proved, viz., that these larvae migrate through the body of the fox in the same way as they do through many other species of animals.

The facts that have been mentioned regarding the round worm point the way toward reducing, at least in some measure, the high mortality of newborn fox pups, as well as in accounting for some abortions and still-births. The fox farmer and the dog raiser, with this information, should appreciate the necessity of ridding his females of ascarids before breeding them, and of endeavoring to prevent them, during the entire gestation period, from swallowing ascarid eggs that may be present in the feces of the fox, dog, or cat, each of which may harbor ascarids capable of infesting the others.

In this connection attention should be called to the statement of Hall² that the possibility of intrauterine infestation with parasitic worms is great. He states that such infestation has now been shown for *Schistoma japonicum*, *Fasciola hepatica*, human hookworms, *Ancylostomum caninum*, *Necator suillus*, *Dictyocaulus filaria* and the cattle ascarid, in addition to *Belascaris marginata*.

The question arises as to whether the ascarid eggs which produce prenatal infestation are the products of worms present in the intestines of the female fox, and embryonated there, or whether they are eggs that have been embryonated outside the body and then swallowed. An effort to answer this question was attempted by making a very careful microscopic examination of the feces of the mother fox in whose pup the larval forms of the parasite were found in the lungs. However, diligent search by all three of us failed to reveal any *Belascaris* eggs. This is not strange, as Martin³ found by experiments *in vitro* that at the body temperature of the host segmentation of the ascarid egg progresses rapidly up to a certain limit, but development of the embryo is complete only at lower temperatures. We may conclude, therefore, that the larvae found in the lungs of our fox pups were the progeny of *Belascaris* eggs that had embryonated

outside the body of the mother fox, rather than of eggs that had never been passed by her.

The great resistance which ascarid eggs of all kinds have to disinfectants is remarkable. This is the chief reason why the parasite is able to survive and perpetuate itself under what seem to be the most unfavorable conditions. For example, the eggs have been subjected for 40 days to a temperature below zero, yet have survived. Eggs incubated in a five per cent solution of phenol, in a saturated solution of copper sulphate, in 50 per cent antiformin, and in a two per cent solution of formalin were not appreciably injured. This inherent resistance is one reason why it is practically impossible to destroy them by the weapons ordinarily used by sanitarians. Since the chemicals in common use for the destruction of germs have been found incapable of killing ascarid eggs, except after long exposure, scalding water is now resorted to as the best means of destroying them.

REFERENCES

- ¹Fullerborn, F.: Askarisinfektion durch Verzehren eingekapselter Larven und über gelungene intrauterine Askarisinfektion. (Vorläufige Mitteilung) Arch. f. Schiffs- u. Tropen-Hyg., Leipz., xxv (1921), 12.
- ²Hadley, F. B.: Are fox pups infested with round worms before birth? Amer. Fox and Fur Farmer, iii (1923), 1.
- ³Hall, M. C.: Developments in veterinary parasitology during the past fifteen years. Vet. Med., xix (1924), 3.
- ⁴Jeffreys, G. A.: The round worms, *Belascaris vulpis*, in fox pups and their removal. Amer. Fox and Fur Farmer, i (1922), 8.
- ⁵Martin, André: Recherches sur les conditions du développement embryonnaire des nematodes parasites. These (Toulouse). Paris, 1913. (Cited by Ransom.)
- ⁶Ransom, B. H. and Foster, W. D.: Observations on the life history of *Ascaris lumbricoides*. U. S. Dept. Agr. Bul. 817 (1920).
- ⁷Shillinger, J. E. and Cram, E. B.: Parasitic infestation of dogs before birth. Jour. Amer. Vet. Med. Assn., xvi (1923), 2.
- ⁸Stewart, F. H.: On the life history of *Ascaris lumbricoides*. Brit. Med. Jour., ii (1916), 2896.
- ⁹Yoshida, Sado: On the migration of ascarid larvae in the body of the host. Jour. Parasitol., i (1919), 1.

NEW BULLETIN ON POULTRY DEFICIENCY DISEASE

"Studies on a Nutritional Disease of Poultry Caused by Vitamin A Deficiency" is the title of a bulletin (378) recently issued by the University of California. Dr. J. R. Beach, assistant professor of veterinary science, is the author. In speaking of the occurrence of the disease, Dr. Beach states:

"There is little likelihood of this disease ever occurring in any flock plentifully supplied with green food no matter how deficient in sources of vitamin A the ration may otherwise be. In time of scarcity of green food, the division of the available daily supply into several feedings of small amounts and the liberal use of yellow corn and buttermilk in the ration would in all probability at least partly compensate for the deficiency."

IMMUNIZATION AGAINST HEMORRHAGIC SEPTICEMIA¹

By JOHN S. BUCKLEY, *Chief*, and WM. S. GOCHENOUR, *Bacteriologist, Pathological Division, Bureau of Animal Industry, Washington D. C.*

At the request of Dr. J. H. McNeil, secretary of the Section on Sanitary Science and Police, there has been gotten together a short report of the results of some experimental work done in the Pathological Division, U. S. B. A. I., on hemorrhagic septicemia, which has aroused the interest of certain members of the veterinary profession and which should prove of the greatest interest to those practitioners who live in districts where the disease is more or less enzootic. The present paper, therefore, is intended to stress the importance of the recent findings on how to immunize animals against the disease. The information is important, also, to the live stock owner and to the shippers of cattle.

Since Drs. Wilson and Brimhall drew attention to the prevalence of the disease in Minnesota, in 1900, much work has been done to learn more about the disease, and many articles have been written from time to time to record the advances that have been made, or to express opinions that ran contrary to the deductions drawn by the writers of these papers. All in all, it has taken about a quarter of a century to get stabilized on what is the truth about the disease and its control, and this paper is not the last word on the subject, but is something concrete, at least, and represents progress, which is all that is ever possible. We have the utmost confidence in what we have to present, hence we feel free in saying what follows.

Hemorrhagic septicemia is a disease that affects domesticated animals and fowl. It occurs so frequently and oftentimes so disastrously to the owners that a review of our means of prevention is believed appropriate.

Without depreciating the value of sanitation, isolation and similar control measures, the real practical and effective means of prevention lies in active immunization against the disease. With a number of carefully controlled experiments we have proved that susceptible animals can be actively immunized against hemo-

¹Presented at the sixty-first annual meeting of the American Veterinary Medical Association, Des Moines, Iowa, August 19-22, 1924.

rrhagic septicemia with bacterins, vaccines and aggressins. The immunity conferred by these products will persist for one year and maybe longer.

Probably the most important consideration in a production of active immunity against hemorrhagic septicemia is the time required to produce such an immunity. A series of experiments conducted on cattle and also on small laboratory animals has shown that vaccinated animals are more susceptible to the disease for the first day or two than unvaccinated animals. Also, that increased resistance does not become demonstrable until about the sixth to the ninth day following vaccination. Between the ninth and the fourteenth day the resistance to hemorrhagic septicemia becomes so fully established that the treated animals are able to withstand very severe exposures. Several hundred fatal doses of virus do not inconvenience animals that have been vaccinated fourteen days or more previously.

The second most important consideration in the production of active immunity against hemorrhagic septicemia is the selection of the product with which to vaccinate. Comparative protection tests made with bacterins, vaccines and aggressins showed very clearly that aggressins afford a greater protection than do vaccines and bacterins. Vaccines composed of attenuated living organisms are not entirely free from the element of danger in that some animals seem to be hypersusceptible and are apt to develop vaccination hemorrhagic septicemia. Furthermore, living-organism vaccines are more or less likely to produce abscesses at the point of inoculation which, of course, are undesirable.

To say that hemorrhagic septicemia bacterins are less potent than aggressins does not imply that they are inert or poor immunizing agents. In fact quite satisfactory immunities have been established by their use—immunities which undoubtedly would be sufficient to enable the animal to withstand a natural exposure. But when comparative tests were made, in which a very severe artificial exposure was given, it could be plainly seen that the aggressin-treated animals possessed a greater resistance than did the bacterin-treated animals.

Inasmuch as the details concerning the preparation of hemorrhagic septicemia aggressins have already been published,¹ we wish to recall only that hemorrhagic aggressin is a germ-free, non-toxic product and its use on non-infected and non-exposed

¹Gochenour, Wm. S.: Jour. A. V. M. A., lxx (1924), 4, p. 433-441.

herds should be attended with no danger. No local or systemic reactions follow its introduction into the animal body.

Inasmuch as animals vaccinated with aggressin are not protected immediately, but appear to pass through a period of more or less decreased resistance, the use of aggressin on infected or exposed herds is not recommended at this time. Healthy non-exposed animals, vaccinated with hemorrhagic septicemia aggressin, will develop a high grade immunity that can be relied on to protect the animal no matter how severe the subsequent exposure to the disease may be.

The experiments conducted to date indicate that quantities of 5 cc of aggressin will regularly immunize cattle and amounts of 2 cc produce the same results in shoats and sheep, although regarding the latter animals a great amount of experimental evidence has not yet been obtained. It is believed that these amounts should not be greatly exceeded, otherwise the effect may be to prolong the immunization process. No efforts have been made to test the effectiveness of minute doses, such as were employed by d'Herelle.

Experiments to determine the value of hemorrhagic septicemia aggressin, made from organisms of bovine origin, for immunization of fowls against cholera are now being made. It is regretted that the work is not sufficiently advanced to enable us to say whether such aggressin is a satisfactory and practical means of protecting fowls against cholera, but it can be said that the results to date have been quite encouraging.

In this connection it might be stated that we have successfully immunized a six-months-old heifer against hemorrhagic septicemia by one injection of 3 cc of a 24-hour bouillon culture of *Pasteurella aviseptica*. Nineteen days after receiving the fowl cholera organisms this animal, together with a control heifer, was exposed to 1.5 cc of a 24-hour bouillon culture of virulent bovine hemorrhagic septicemia organisms. Eighteen hours after the exposure to the test virus the control animal was dead of hemorrhagic septicemia, while the *Pasteurella-aviseptica*-treated animal was unaffected by the exposure, save for a slight swelling at the point of inoculation. While this observation in itself may have a very limited significance, it does lend some additional encouragement as to the possibility of combating fowl cholera with hemorrhagic septicemia aggressin prepared from cattle.

As stated at the beginning of this paper, we believe that the results herein recited indicate material progress in our means of controlling hemorrhagic septicemia.

DISCUSSION

DR. EICHHORN: I wish to make only a few remarks. Up to date we have inoculated about 350 head of cattle, and we have made some observations which are very interesting. In the original experiments of Buckley and Gochenour, they succeeded in infecting practically every animal—that is, susceptible animals. They have not run across naturally immune animals. We have tried to infect about 350 animals; we have successfully brought down only 165, although using the same strain of the culture obtained from the laboratories at Washington. The animals which came down, did so as described by Buckley and Gochenour. The infiltrations were so remarkable at times that the gelatinous exudates under the skin were from two to three inches in thickness, and extended from the submaxillary region down to the brisket.

CHAIRMAN HALL: What is the method of exposure?

DR. EICHHORN: The injection must be made subcutaneously. We found that as soon as we made it intramuscularly the animal would die, with a more generalized septicemic condition, of the hemorrhagic type, without the manifestation of the extensive edematous condition.

DR. NEWSOM: Any one who has worked with the hemorrhagic septicemia organism realized that there is a great difference in virulence. You will remember that some years ago we did some work in which we confirmed work which had been done by others—that the live organism was more effective in giving immunity than was the dead. At that time we had never destroyed a sheep with less than one cubic centimeter of a forty-eight-hour bouillon culture of the organism, and that was in only one instance. Ordinarily it took ten cubic centimeters and that intravenously. Twenty cubic centimeters was the dose necessary when given subcutaneously.

We ran along for a number of years, during which time we never found a culture that would kill in less than a twenty-cubic-centimeter dose. We wanted to carry on some work in the San Luis Valley, and we made a live-organism vaccine and sent it up there with the recommendation to give five cubic centimeters, feeling that that was safe. We had never killed an animal with anything like that small an amount. Fifty lambs were vaccinated the first day with five cubic centimeters of that vaccine, and eight died with hemorrhagic septicemia. I am thoroughly satisfied of it now, although I was not for a number of years.

LITERATURE ON FOWL DISEASES

The University of Illinois has issued a series of circulars, each dealing with an important disease of poultry. These have been written by Drs. Robert Graham, I. B. Boughton, and E. A. Tunnicliff, of the Division of Animal Pathology and Hygiene. There are five circulars, as follows:

285—Tuberculosis of Fowls

286—Fowl Cholera

287—Fowl Typhoid

288—Coccidiosis of Poultry

289—Botulism in Fowls

DIAGNOSIS AND TREATMENT OF DISEASES OF THE SKIN OF DOGS¹

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The skin of animals, with its covering of hair, is quite resistant to ordinary injurious influences; this is necessary in order to carry out its major function as a protective covering for the body. Moreover, the skin is endowed with peculiar powers of regeneration, and repair of slightly injured portions or areas subject to continuous exposure normally takes place without sensible inconvenience. Yet the skin is subjected to such a variety of influences, both from within and without, that its resistant and reparative qualities are often so hampered or overtaxed that it becomes diseased. Internal influences which may affect the skin include improper diet, disturbances of the nervous and circulatory systems, digestive disorders, administration of certain drugs, and certain infectious diseases. External influences are very numerous and include extremes of heat or cold; chemical irritants, either intentionally or accidentally applied; too frequent bathing or its antithesis; the use of strongly germicidal soaps; the various animal parasites peculiar to the skin, and a few vegetable parasites.

Diseases of the skin are open to a great variety of classifications, but it would seem that the most natural grouping is into parasitic and non-parasitic conditions. Abnormal conditions of the skin constitute from 20 to 50 per cent of all diseases of dogs that are presented to the clinic for small animals, or to the veterinarian specializing in the diseases of small animals. Their diagnosis, as a rule, is not difficult; their treatment very often is. We sometimes seem prone to consider skin diseases too lightly, perhaps because they are conditions in which most of the lesions, apparently, are on the surface where they may be observed and checked at will. The fact that the major lesions are superficial renders them no less serious, because they may, and often do, progress to such an extent as not only to endanger the life of the animal but even to make it advisable to kill it if death does not supervene naturally.

¹Read at the Short Course for Veterinarians, University of Wisconsin, Madison, Jan. 29-Feb. 1, 1924.

NON-PARASITIC DISEASES

Of the non-parasitic diseases of the skin of dogs, simple cutaneous pruritus, an uncomplicated erythema of the skin, dandruff and alopecia are relatively rare or unimportant. They will be described briefly, however, because of their diagnostic relation to other conditions. The more notable non-parasitic affections are acne and eczema.

Cutaneous pruritus: Simple itching of the skin in dogs, although usually a symptom of a more definite skin disorder, is sometimes primary but without any discernible cause or demonstrable change in the skin itself, or it may be due to shedding or recent clipping of the hair, the use of strong "flea-soaps," or too frequent bathing. According to Hutyra and Marek, it may also accompany diabetes mellitus, and chronic diseases of the kidneys and digestive tract. The itching may be so slight as to cause only occasional scratching, or it may be so intense as to lead to such constant irritation of certain parts of the body that definite lesions form.

In making a diagnosis, the presence of parasites must be excluded and examination made for a possible underlying disease. Treatment of simple pruritus is not necessary unless scratching of the affected parts is causing injury to the skin. To allay the itching, various applications are recommended, such as 2 per cent salicylic acid in alcohol, spirits of camphor, cold water compresses and the like. In house dogs that are fat and overfed, restriction of the diet is indicated, together with saline laxatives. Improvement has also been noted following a complete change of diet in cases occurring without apparent cause.

Erythema: Some authorities distinguish a mild, acute dermatitis and a chronic dermatitis, the former being essentially a simple reddening of the skin, and the latter setting up changes which lead to hyperplasia of the skin elements. However, I believe the chronic form occurs only in the course of other more definite skin diseases, and is seldom primary. Erythema is most often seen as a precursor of a definite skin ailment, but when there are no further changes in the skin, it is usually transient and requires no treatment. Itching may or may not be present. The diagnosis should be tentative until observations have ruled out the possibility of such diseases as eczema and mange in their incipient stages.

Treatment may be required if the condition persists or if

itching is marked. Daily application of Goulard's extract, alcohol, and bay rum, or bathing with cold water or lime water may be beneficial. Any digestive disorders should be corrected.

Dandruff: The occurrence of dandruff may be diffuse or circumscribed, and is either dry (seborrhea sicca) or oily (seborrhea oleosa). The scales or oily deposits form without alteration of the skin itself, which is one point in distinguishing the condition from more serious ailments. Itching is usually present in some degree. The absence of parasites definitely excludes mange.

In treating dandruff, the skin should be cleaned thoroughly by bathing and brushing, preferably preceded by clipping, if the dogs have long hair. These measures should be followed by the application of a 5 per cent solution of resorcin, salicylic ointment (10 per cent), or a lime and sulphur solution. If the animal is in poor condition, good nourishment is indicated. Complete arrest of dandruff is not to be expected, as the condition recurs frequently unless treatment is applied at regular intervals.

Alopecia: True alopecia is infrequent, but loss of hair due to other skin diseases is often seen. Some dogs manifest a rather continuous shedding of the hair, without actual baldness or thinning of the hair resulting. True alopecia may be widespread or confined to certain areas of the body. The skin itself shows no marked change except denudation and a bluish-black color, but is of normal texture. The diagnosis of alopecia is dependent on a history of a continuous loss of hair, the skin remaining unchanged. The presence of parasites which might cause a similar denudation must be considered, especially *Demodex folliculorum* and ringworm.

Treatment depends on the cause, if this can be determined. When there is a history of previous serious disease, or the animal has recently whelped or raised a large litter, we may expect spontaneous improvement when the general condition is improved. When alopecia exists, due to some inherent fault of the skin, such as faulty innervation, the prognosis is bad and little can be accomplished by treatment. In all cases daily stimulation of the circulation in the skin by massage or brushing should be employed; the skin should be kept clean, and balsam of Peru in alcohol (1:10) and similar stimulating remedies applied at intervals of a few days. Internally, arsenic may be administered in the form of Fowler's or Donovan's solution.

Acne: Acne is a localized condition in which there is an inflammation of the hair follicles and glands of the skin, often

resulting in the formation of pustules and supporting areas. The term furunculosis is generally used to designate a more extensive manifestation of the same condition. The cause is not definitely known, but bacterial infection certainly plays a role in almost every case. Acne occurs when there is undue pressure from collar or harness, but it may also appear in areas that are not subject to such irritation.

The diagnosis is quite definite following careful exclusion of mange parasites, particularly of the demodectic variety. The characteristic, small rounded nodules, which vary in size from 0.5 mm. to 5 mm. (a mustard seed to a pea), may rupture spontaneously and discharge their contents, and more nodules form. The area sometimes has the appearance of a slough, and it is often possible to thrust a probe or sharp pointed scalpel anywhere through the skin of the affected area, releasing pus or a sanguino-purulent exudate.

In treating acne, we have had good results by clipping the hair all around the involved area, and removing all crusts and discharges. Slight pressure will often rupture the larger nodules, which should be thoroughly evacuated and antiseptic solutions applied in cleansing. Dusting powders are preferred by some as a dressing, but 5 per cent salicylic ointment seems to be quite effective. Iodin may also be used after emptying nodules. The employment of autogenous bacterins has been recommended and may prove of considerable value in obstinate cases.

Eczema: Eczema in the dog is a large subject in itself, but an attempt will be made to review certain phases of the disease as thoroughly as possible. The predisposing causes are many and include under-nutrition and over-nutrition, accumulations of dirt on the skin, chemical irritants, digestive disturbances, parasites, and so forth. The condition is most often seen in long-haired dogs in which it is difficult to give the skin good care, especially if the animal is exposed to insanitary surroundings. The two chief forms of eczema in the dog are the acute, diffuse type, which spreads very rapidly, and the circumscribed type, which shows no tendency to spread but occurs on those parts of the body most subject to irritation and accumulations of dirt, such as the area around the tail, the back, and the neck. In male animals that lie about a great deal on hard, damp floors, the scrotum alone is often affected.

Diagnosis of eczema depends on the characteristic development of the nodules, vesicles and pustules, and the reddened,

moist appearance of the skin, with considerable loss of hair. Care must be taken not to overlook parasites.

The treatment of eczema must be thorough and painstaking. The diseased areas may be cleansed with very mild soap, using as little friction as possible; in the very acute stages it is better to use oil to soften the crusts and scabs. The hair should then be clipped over and around the affected areas. The treatment varies according to the stage of the condition or the appearance of the eczematous patches.

When the skin is extensively reddened, Goulard's extract, 1 to 2 per cent creolin, Burow's solution or Carron oil should be applied. If the surface is moist, it should be dusted with corn starch, zinc oxid, talcum, boric acid or sulphur. On a dry skin, ointments containing zinc oxid or salicylic acid are useful. In those cases in which there is much exudation of serum, the dusting powders may be tried, but are not always sufficient. It may be necessary to promote scab formation by painting the diseased parts with a 5 per cent silver nitrate solution several times daily. After the scab forms and the lesion has ceased to spread, the scab may be softened and removed, and powders or healing ointment applied. If the eczema has become chronic, with thickening and cracking of the skin, it is necessary to resort to stronger preparations which will stimulate the skin. Tar preparations are very good; ichthyol is excellent. A good combination is: oil of tar, three parts; rectified spirits, two parts; and sulphuric ether, one part, which should be applied every two or three days.

The general management of eczema is often quite as important as the local treatment. The dog's general condition may require attention and it must be prevented from injuring diseased parts by violent scratching. Muzzling is often necessary to prevent the animal from licking off applications that are harmful internally. The diet throughout the course of eczema must be simple and consist of easily digested foods. It is often well to administer arsenic in the form of Fowler's solution, one- to two- or three-drop doses over considerable periods.

PARASITIC DISEASES OF THE SKIN

This group includes infestation with lice, fleas, the sarcoptic and demodectic mange mites, and the vegetable parasites, *Trichophyton tonsurans* and *Achorion Schonleini*.

Lice and fleas: Infestation with these parasites is usually so obvious and the diagnosis so readily made, that extensive con-

sideration of them is unnecessary. They may exert a really injurious influence on very young animals, however, and are objectionable on all. Very heavy infestation with either lice or fleas is capable, moreover, of causing more serious disorders of the skin.

A good routine treatment to rid dogs of these parasites is dipping or bathing the entire body in a 1 or 2 per cent solution of any of the standard coal-tar dips. Creolin is very widely recommended, but for years we have used a 1 per cent solution of a coal-tar dip which is quite as efficacious and less expensive. If the application is thoroughly made, clipping is unnecessary even of long-haired dogs. We believe this method to be the most convenient and practical for routine use. However, in cases in which the odor of the coal-tar preparations may be objectionable, pyrethrum powder may be satisfactorily used for fleas.

Sarcoptic mange: Scabies is quite common in the dog, and its treatment can be satisfactorily accomplished in most cases. The diagnosis of sarcoptic mange is usually possible by microscopic examination of scrapings from diseased areas. The scrapings should be deep, and repeated examinations are occasionally necessary. In cases in which all the clinical manifestations indicate scabies, even though it is impossible to demonstrate the presence of the mites, treatment should be instituted as a therapeutic test. Improvement may be taken to indicate that the suspected presence of sarcoptic mites has been confirmed. Scabies is characterized clinically by the intense, continuous itching, which increases on exposure to increased warmth; by the accumulation of skin debris, and by the parts of the body on which it most frequently occurs, as about the head and the thin-skinned portions of the abdomen and inner thighs. Scabies may be mistaken for eczema, acne, or in fact, almost any skin eruption; microscopic examination is, therefore, imperative.

Lime and sulphur solution applied to the whole body by dipping or scrubbing is a very satisfactory treatment. Clipping of the hair may be advisable in some very long-haired dogs, but we have found this unnecessary when the solution is thoroughly applied to the entire body, especially by the dipping-tank method. The application of the lime and sulphur solution should be repeated every four or five days or every week until the condition clears up; usually three treatments are sufficient. If any small areas of infestation persist after a course of dipping, such spots are painted with a mixture of sulphur and oil, or sulphur ointment

is applied. The lime and sulphur solution may be obtained in a concentrated form and diluted for use with six or seven parts of water. There are many formulas for preparations to use in treating sarcoptic mange. These are more or less expensive, containing creolin, balsam of Peru, phenol, sulphur, oil of tar, kerosene, linseed oil and so forth, but they are very satisfactory. However, it is not believed that the extra expense of such preparations is necessary in treating scabies routinely.

Demodectic mange: Mange due to the hair-follicle mite, *Demodex folliculorum*, continues to be the most difficult to treat of the skin diseases of the dog, in spite of the great number of remedies and forms of treatment that have been recommended. Demodectic mange occurs in two forms: squamous and pustular, but a combination of the two is frequently observed. The squamous form usually appears about the head, and the anterior surface of the neck and breast, and is marked by reddening of the skin, scab formation and loss of hair, which may be extensive or confined to small areas. The hair in and around the affected areas can be pulled out in quantities with little effort.

The pustular form, likewise, most often begins around the head and neck, spreads to the forelegs, if untreated, and may eventually affect the whole body. The skin becomes red and swollen, quickly develops folds and loses most of its hair. The nodules develop and may reach about 4 mm. (the size of a pea) before rupturing, with resultant scab formation. Demodectic mange differs from sarcoptic mange in the absence of intense itching, and specifically the diagnosis is marked by the presence of the hair-follicle mites, which can be demonstrated by microscopic examination of the contents of a pustule. If there are no pustules, a deep scraping must be made to obtain the parasites from their embedded position in the hair follicles.

The multiplicity of treatments suggested for the condition indicates in itself that there is no specific which may be universally or routinely used to effect cures. No attempt will be made to enumerate the various forms of treatment recommended for red mange, because textbooks and veterinary periodicals give many formulas. The practitioner, to be fair to himself, must decide whether treatment should be undertaken. Cases in which the infestation is slight and well localized offer some hope of an eventual cure, but in bad cases we consider it better to recommend destruction of the animal. In any case, treatment must be carried out painstakingly for weeks and months, and in some

cases the owners will not be willing to assume the expense of such prolonged treatment.

To begin with, the skin should be thoroughly cleansed with non-irritant soap, to remove all crusts and scurf. The hair should be clipped short, preferably over the whole body. This can be best accomplished, especially in short-haired dogs, after the skin has been well cleaned. For local application, we have had the most encouraging results with the formula given by Marsteller at the meeting of the American Veterinary Medical Association in St. Louis, in 1922. This is: kerosene, 8 oz., raw linseed oil, 8 oz., carbolic acid, 1 oz., oil of tar, 1 oz., and flowers of sulphur, 4 oz. Dr. Marsteller recommended that this be rubbed or painted on once a week, but we have preferred to intensify the treatment somewhat by vigorously rubbing the mixture into the skin of one-third to one-half the body at a time, continuing until the whole body has been covered. The day following, a good thorough bath is given to remove accumulated scurf and deposits from the mixture, and the process is repeated. At each treatment we open any pustules that are present and apply the mixture to them. The treatment as outlined is intended for the whole body and we believe this should be carried out in every case unless the mange is confined positively to certain areas. The general condition of the dog must be carefully watched during treatment. If the animal can be kept in good condition, much is accomplished, but the minute that poor physical condition begins to appear, the prognosis is unfavorable. Arsenic may be administered internally as an adjunct to the treatment, and over considerable periods of time. If a permanent cure is effected, the practitioner is to be congratulated.

Ringworm: Disease of the skin produced by the vegetable parasite *Trichophyton tonsurans* occurs rather rarely in the dog. It is characterized by eruptions which usually begin about the head and neck, the spots being bald, the borders regular in outline and gradually extending. The affected areas become covered with a dirty gray scab, beneath which the skin is either nodular or somewhat raw and suppurating. Although the condition can usually be recognized by the characteristic circular arrangement of the diseased areas, the microscope must be used to effect an accurate diagnosis.

Treatment requires clipping around the affected areas, softening and removal of crusts and scabs with oil, and washing with soap. Creolin ointment, iodine, 10 per cent, salicylic ointment,

sulphur ointment or any good anti-parasitic agent may then be applied daily until a cure is effected. Animals affected with ringworm should be isolated and handled carefully, as the condition is quite readily transmitted to other animals and to man.

Favus: Favus is very rare in dogs, but may affect the head, abdomen or legs. It is caused by the vegetable parasite, *Achorion Schonleini*, is characterized by the formation of yellow crusts which become cup- or saucer-shaped, and cause corresponding depressions in the skin beneath. These crusts or scabs vary in size from 1 mm. to 25 mm. (a pinhead to a quarter), and in thickness from 3.125 mm. to 4.69 mm. (one-eighth to three-sixteenths of an inch). If the crust is removed, bleeding follows from the raw exposed surface. The growth is slow. Diagnosis is based on the slow-growing crusts with the characteristic shape.

The crusts should be removed and the hair clipped about the affected areas if extensive. Tincture of iodine, 10 per cent salicylic acid in alcohol, bichlorid of mercury (1:500) or dilute silver nitrate solution should be applied. Daily treatments, for a period of a week, will usually be sufficient.

MASSACHUSETTS VETERINARIANS STUDY POULTRY DISEASES

The School of Avian Pathology for Massachusetts Veterinarians was held at the Norfolk County Agricultural School, Walpole, Mass., from October 22, 1924, to November 14, 1924, under the direction of the Department of Veterinary Science and Animal Pathology and the Extension Service of the Massachusetts Agricultural College, cooperating with the Norfolk County Agricultural School, the Massachusetts Veterinary Medical Association, and the Department of Poultry Husbandry of the Massachusetts Agricultural College.

Programs were arranged for each of the four days of the course, and particular attention was given to the anatomy of the domestic fowl, the pathology of all important poultry diseases, therapeutics employed in connection with poultry practice, including antiseptics and disinfectants, and poultry husbandry, dealing with such questions as incubation and brooding methods, poultry feeds and feeding, and the housing of poultry. A splendid corps of experts on these subjects was secured for the course, and the veterinarians of Massachusetts are to be congratulated for their progressiveness in this direction.

ABORTION CONTROL UNDER ACTUAL FARM CONDITIONS

By L. E. STARR, *Goshen N. Y.*

The herd consisted of about three hundred head of purebred beef cattle, of all ages and sexes. In addition to these there were about 35 or 40 grade nurse cows of dairy type. With the exception of the show herd they were allowed to range as long as the weather allowed and were kept in open sheds and feed-lots in the winter.

The farm consisted of two thousand acres of woodland, open pasture and cultivated land. The farm plot is shown in chart 1. It is all rolling ground, with a small stream running diagonally across it.

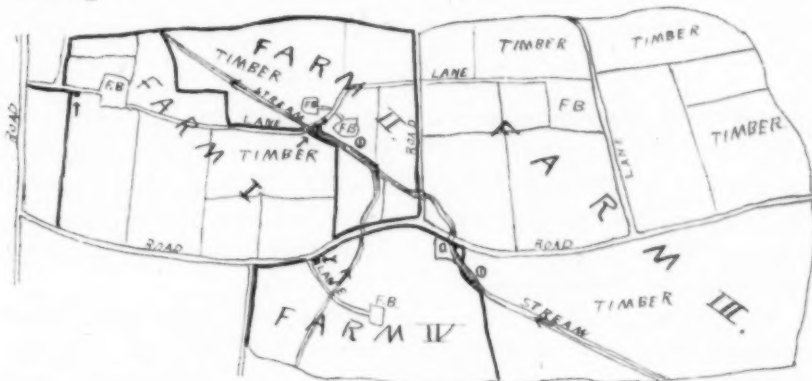


CHART I. The Farm Plot. FB Farm buildings; arrow points to foot paths; double fences indicated by small circles.

Farms I, II and III were used for negative cattle, farm IV for positive and doubtful cattle. Its surface water drained through one field of farm II and into the small stream. No negative cattle, however, were allowed to graze on land which could be contaminated by overflow from farm IV, nor had they access to the stream below the high cows until it had flowed for one-half mile, exposed to sunlight and over a gravel bottom. This has been proved experimentally to be a safe distance to destroy abortion bacilli.

The herd had suffered serious losses, due to abortion, in the early summer of 1922. The owners then decided to try to check the progress of the disease by means of the agglutination test and

isolation of the reacting animals. The farm was operated for profit and the method was decided upon in an effort to save their investment as well as an experiment to determine its practicability under actual farm conditions.

During the late summer and fall of 1922, the herd was tested at about two-months intervals and all positive or doubtful cows were quarantined on farm IV. All nurse cows that reacted were sold to the butchers. At the first test about one-fifth of the mature animals were found positive or doubtful. This ratio was constantly changing, since cattle were being bought and sold regularly. All new animals were held in quarantine until results of the blood test were known.

A herdsman was in charge of the animals on farm IV, independent of the remainder of the herd. A bull was kept there so that no transporting of cows was necessary.

ABORTIONS BECOME FEWER

Following the epidemic of abortion in the early summer, and the inauguration of the test, abortions became fewer in number, only a few occurring and these being for the most part confined to farm IV, except one cow that aborted unexpectedly in the clean pasture in October. Including the January, 1923, test, the situation looked favorable.

Following the January test the cows on the three clean farms were interchanged a great deal, in preparation for a sale, and also for greater convenience in caring for them. In March the farm work was crowding and there was no apparent cause for uneasiness, so the next test was postponed until April.

In the meantime all the best cows were put on farm III and were divided in two main lots. One lot of about 40 cows and heifers was placed in a crimson clover field. Most of the cows in this lot, of breeding age, were pregnant. The other lot was somewhat smaller.

In April another herd test was run. Nine cows that were negative at the previous test reacted positively or doubtful and were isolated. One was found springing prematurely at this time, was isolated and aborted a dead fetus. The situation was alarming. We watched the pregnant cows very closely. A close check was made of the cows that reacted. All of them had come from farm I, at the time of transfer, a few weeks before. This indicated that farm I was the probable source of infection. But how? Only negative cows had been kept there and no abortions

due to the Bang bacillus had occurred. One cow on this farm was taken out of the pasture and aborted twins the next day. She was isolated after the abortion was negative. Abortion of twins is not uncommon, however, independent of any infection. Evidently some recent infection had occurred a short time prior to transferring the cows and subsequent to the January test and it must have been carried to farm I from some outside source.

At this time the herdsman's helper at farm I roomed and boarded at farm IV. He did not go among the cattle there and a concrete foot bath was at the gate to clean and disinfect his feet. I doubt that he carried the infection although he may have done so. I objected to the arrangement but it was the only available rooming-place and we had to take a chance.

Early in the summer, on a professional visit to a farm about one-half mile from farm I, I was asked to prescribe for two cows that were not doing well. The history was that they had aborted several days previously. We found them in the pasture with rotten placentas protruding from the vulva, discharging pus and with the characteristic unthrifty appearance. The dead fetuses were somewhere in the pasture, probably eaten up by dogs or buzzards. I advised the owner to isolate the cows and give them the proper attention. He informed me that he frequently had cows abort, that he rarely paid any attention to them nor buried the fetuses. He bought pregnant cows and vealed calves off them until they were dry. If the cows were not productive after that, they were sold to the butchers. He had had several abort that spring.

BUZZARDS AND DOGS SPREAD INFECTION

Buzzards and dogs were very numerous and it is possible that the buzzards feasted on the dead fetus and flew over our clean pasture, one-half mile away, or alighted in the pasture and discharged their bacteria-laden bowel contents on the grass where they were taken up by the cattle. Dogs as you all know are not satisfied just to fill their stomachs with any putrid mass found but must lie down and roll in it. They could easily have carried the fresh virulent organisms from the infected carcasses to the clean pasture so short a distance away.

After careful elimination, the herdsman's helper, the dogs and buzzards were the only visible breaks. While nothing could be proved, in my opinion, one of the factors mentioned above accounted for the new infection on farm I and its further dissemi-

nation through interchanging the cows.

Both the manager and I went wherever it was necessary to go, but we took every precaution to prevent carrying the infection. I wore a jumper outfit, rubber apron and rubber boots when working on the quarantine farm. The jumper outfit was left in the barn there and used only there. My rubber boots and apron were washed before being used about the clean animals, so I believe this personal factor can be eliminated.

Of the cows that reacted positively at the April test and were isolated, all aborted that were six or seven months pregnant. In all, eleven cows aborted during May and early June.

An interesting incident occurred at the time of this outbreak. A terrier bitch that had the run of the farm aborted three dead puppies. I did not know if it could have any connection with the abortion among the cattle or, if so, could she be a spreader, but took no chances and had her confined in the Thoroughbred horse-barn until something could be determined. I drew a sample of blood and it was reported doubtful so I drew another in two weeks and it was doubtful also. Very little work has been done on the normal agglutinative powers of dog serum and the agglutination test in this case proved nothing. It may have been only a coincidence. On account of the increased number of positive cows we could no longer maintain them on farm IV and, too, it was deemed necessary to use more energetic measures to stop the infection if possible.

NEW QUARANTINE ESTABLISHED

Accordingly a new quarantine or dead-line was established along the stream, all of farms IV, I and II on the corresponding side of the stream to be for the positive cows. That part of farms II and III, on the opposite side, for the negative cattle. At all points in the fields or the lane where there could be contact between the negative and positive cows double fences and gates were put up. No negative cows were allowed access to the stream below the positive cows. No traffic was allowed by foot, team or automobile by the drive through the farm unless absolutely necessary. Foot-tubs containing bichlorid tablets were installed at the lane leading to the road from farm I at the quarantine line in the lane and all going through were required to dip their shoes. We had as tight a quarantine, and enforced it, as it was possible to put on and continue farm operations as a unit. But the damage had apparently been done.

During all of this period the manager, head herdsman or myself inspected the cows daily in the pasture or feed-lot, trying to prevent any abortions outside the quarantine. The negative cattle had, in the meantime, been divided into two main lots for convenience in handling and to utilize our forage. One lot, consisting of about thirty pregnant cows and young heifers, was in a crimson clover field. On Sunday, about twenty days after the April test, the herdsman went to the pasture in the evening and found a cow had just aborted. She had been negative about twenty days before. He called help, took the cow to a tight maternity stall, removed the fetus and thoroughly covered the ground in the immediate vicinity with lime and a strong solution of Kreso Dip (P. D. & Co.). There was no way of knowing, however, how many cows had infected themselves during the parturition by licking or nosing the calf or just how much of the pasture she had infected herself. On account of pasture conditions at that time the remaining cattle could not be removed from the pasture.

SITUATION GETS WORSE

About two weeks later, this pasture was exhausted and it was necessary to move the cattle. I examined them and those found pregnant were moved to a farm of about one hundred acres of pasture some six miles away. This scattering of the cows again, with all the evidence of a recent infection, was against my better judgment but that was our only available pasture. The open cows could not be sent there on account of breeding and treatment for sterility where necessary. For economic reasons the cows could not be put up and fed until the danger was over. It must be borne in mind that we had to keep expense down and could not deviate, to a very great extent, from ordinary farm practices. Either the manager, chief herdsman or myself made a trip daily to this farm to inspect the cows.

Then the busy season came on, farm operations were booming, every one was busy. The distant pasture was neglected for two days. On the third day I went. From the road, all the cattle were out of sight except one. That was mighty suspicious. I went to her and found an eight-month abortion, probably three of four hours old. The cow had wandered off some distance with the placenta dragging in the grass. The only thing I could do was take the cow across most of the length of the field and tie her, bury the fetus and herd the remainder of the cows into

an adjoining field. There was no way of knowing how many of this lot had been infected again from this abortion.

All our negative cows were exposed but one lot. It seemed that we were only prolonging the infection instead of preventing its spread. In spite of our utmost vigilance and care we could not prevent an occasional abortion in the field among the negative cows and an open abortion among a log of pregnant cows that have never been exposed to the infection is disastrous in work of this nature. If we continued much longer, adding to our positive herd, it would be but a short time until the latter would be in the majority.

It was necessary to decide at once on a definite policy to pursue for the benefit of the corporation. The corporation was attempting to show a profit. The experiment had been started primarily to do something to save the herd and secondly to test its practicability on a large scale under ordinary farm conditions. Considering only the best interests of the corporation I advised one of two measures, i. e., turn the cattle together indiscriminately, allow the disease to take its course, along with the proper sanitary measures, or try to give the cows some artificial protection by means of bacterins, preferably the latter. This was adopted.

SUMMARY

We were attempting to control abortion and eventually eradicate it, in a large herd, by the agglutination test and isolation method, under actual farm conditions.

Abortions were numerous at the time the test was started.

Infection was well established in the herd before it was started.

Time and reasonable expense were not spared to make the quarantine effective.

Abortions occurred in epizootic form in the early summer of 1922, then became quiescent, only to recur in the early summer of 1923.

After starting bacterin treatment, with controls, it became quiescent again. We have not determined, to date, the actual value of the latter as a preventive measure.

The fact that the pastures were large and that the cattle were never stabled made a satisfactory daily inspection very difficult.

For economic reasons we had to move and scatter the cattle too frequently for safety.

CONCLUSIONS

The infection is insidious and very easily spread.

To be successful, the test should be started before the infection has become prevalent in the herd.

Outside conditions may influence the results and should be very carefully considered.

Agglutination tests on all animals should be run at not less than two-months intervals.

All known pregnant cows should be kept close at hand, where they can be carefully observed every day. A majority of abortions can be detected two or three days before abortion occurs and the cows isolated.

Exceptional cases give very little warning.

An abortion in a pasture, with other pregnant cows, is almost fatal.

Strict sanitary measures must be observed.

The method was not successful in this instance.

TUBERCULOSIS ERADICATION NOTES

Twenty-five counties in Iowa are actively engaged in tuberculosis eradication work, according to a recent report.

The Board of Health of Canton, Ill., recently considered the advisability of an ordinance making compulsory the tuberculin testing of all cattle supplying milk to the city.

Wabash County (Ind.) has appropriated \$3700 for tuberculin testing of cattle in that county. DeKalb County (Ind.) recently appropriated \$3600 for the same purpose, whereas Steuben County rejected the request of the County Farm Bureau for an appropriation of \$4000 for tuberculosis eradication work.

The work of eradicating bovine tuberculosis in Illinois has progressed to such an extent that approximately 50,000 cattle are now being tested every month.

Wisconsin stood first among the states in the number of cattle tested during August. According to official figures, there were 85,142 head of cattle tested during the month. Iowa stood second, with Illinois and New York close behind.

Clinton County (Ill.) recently postponed action on a proposed appropriation of \$4000 to defray the expenses of tuberculosis eradication work in the county.

The Chamber of Commerce of Findlay, Ohio, has advanced a fund of \$1500 to serve as a drawing account in the preliminary work of tuberculosis eradication in Hancock County.

THE DISCHARGE OF BACTERIUM ABORTUM IN THE FECES OF CALVES FED MILK CONTAINING THE ORGANISM

By E. H. BARGER and F. M. HAYES

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The possibility that *Bacterium abortum* infection may be disseminated through the alvine discharges of the suckling calf receiving milk containing the organisms has been suggested by a number of investigators. Particular reference, however, has usually been made to the intestinal discharges, for the first few days, of the viable calf expelled from an infected uterus. So far as we are aware no one has published data to prove that virulent Bang organisms may or may not pass through the entire digestive tract of the calf after the milk-drinking period is well established.

Birch and Gilman¹ have shown that *Bacterium abortum* traversed alive the entire digestive tract of one cow, although a high percentage of negative feces was obtained even after feeding enormous doses of the cultures. Hart² states that "definite experimental evidence that such animals (calves) excrete abortion bacilli with intestinal discharges has not been established." In an article published in 1922, Schroeder³ stated, in speaking of the modes by which the Bang organism may be expelled, that "the Bang organisms may be expelled with the alvine discharges of infected calves that drink infected milk seems probable but has not been definitely proved." Connaway,⁴ in a paper read at the St. Louis meeting (1922) of the A. V. M. A., stated: "The danger of transmitting abortion infection from the milk of an infected cow through the fecal discharges of calves nursing infected mothers has not been determined experimentally (field observations of a few cases have shown no bad results.)" Cotton,⁵ in discussing the above paper, said: "We did a little work on this problem some years ago at the Experiment Station. We fed calves cultures of *B. abortus* and made guinea-pig inoculations from the feces. Our results were negative but as so many of the guinea pigs died before lesions, due to the abortion bacilli, could have developed, the experiment was not conclusive."

Practically every plan of control of infectious abortion emphasizes the importance of preventing the non-infected cow from

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coming in contact with any material that may be contaminated with the bodily excretions containing the infective organisms. Obviously if any such plan is to be successful *all* of the channels by which the germs may be disseminated must be known before the healthy bovine can be fully protected. With this principle in mind it occurred to us that the intestinal discharges of the calf drinking milk containing *Bacterium abortum* had not received the experimental consideration they deserved and that if these discharges were at all a factor in spreading abortion they must contain virulent abortion bacilli at least. If the feces of such calves really do contain the Bang bacillus then calves may be a factor in the spread of the disease and the often repeated statement that such is the case will be justified by more than an assumption.

To solve a part of this problem we have carried out three sets of experiments, at different times, with suckling calves, using two calves in each experiment. None of the calves was over 72 hours old when the experiments were begun and each calf was obtained from a cow with no history or symptoms of abortion infection. In each experiment the calves were confined separately in light, airy, stalls which had previously been cleaned and disinfected. Group "A," containing two bull calves, was fed artificially infected milk. Group "B," containing one heifer and a bull, was also fed artificially infected milk, while group "C," containing one heifer and a bull, one of which was fed milk artificially infected and the other milk from a cow known to be regularly discharging *Bact. abortum* through the milk. Before feeding any infected milk, tests were run on the blood serum and a sample of feces from each calf injected into guinea pigs.

The milk used for feeding was inoculated as follows: Slants showing a good growth of *Bacterium abortum* were washed down with 20 cc of physiological saline solution. One-half of this suspension (10 cc) was given to each calf, morning and evening. Each received 20 cc of a fairly heavy suspension daily.

The technic of the agglutination tests was as follows: Blood was drawn from the ears of the calves, the serum secured by centrifugation and dilutions of 1-50, 1-100, 1-200, and 1-500 set up, using a polyvalent antigen of both bovine and porcine strains.

Fecal samples were secured from the rectum by using slender wooden spatulae, previously sterilized. About 5 grams of feces were collected twice a week and the feces immediately transferred

to tubes containing 20 cc of sterile physiological saline solution. The tubes were shaken vigorously, to break up the fecal lumps. The fluid mixture was then filtered, using sterilized filter paper and utensils. The resulting filtrate was a clear, straw-colored to brown solution. One and one-half cubic centimeters were injected subcutaneously into each of two guinea pigs. Blood samples were taken at the same time that the feces were secured and set up in agglutination tests.

An effort was made at first to plate out the fecal filtrates, using high dilutions and a gentian violet medium, but so many contaminating organisms were present that any possible growth of *Bacterium abortum* was obscured. This phase of the work was abandoned and guinea pig inoculations relied upon to demonstrate the presence or absence of *Bacterium abortum* in the fecal filtrates.

At the end of the feeding period, of from three to four weeks, the calves were slaughtered for veal. The lymph glands of the head region and some other tissues, except in group "A," were cultured and 2 cc of an emulsion from each set of organs injected subcutaneously into each of two guinea pigs. At the end of from four to six weeks after injection all inoculated guinea pigs were killed, blood secured for agglutination tests, and cultures made of the livers, spleens and lungs.

Tables I, II, III, IV and V give the results of the guinea pig inoculations of fecal material and tissues.

DISCUSSION

The first experiment (group "A") was started on March 5, 1923, and the results were so positive, as will be noted in table I, for the presence of *Bact. abortum* in the calf feces, that we thought it desirable to repeat the experiment. Experiment 2 (group "B") was begun on October 29, 1923. Although *Bact. abortum* was found once in calf 1 and twice in calf 2, a considerable number of guinea pigs died from some causes other than from feces injections. The losses at that time were occurring in all of our guinea pigs regardless of injections. The death of so many pigs made it seem advisable to conduct another test. This was started on February 20, 1924, and at this time we were fortunate enough to have the milk of one cow that we knew was discharging *Bact. abortum* in the milk regularly. In this latter experiment (group "C") one of the calves was fed milk from this cow. It will be noted in table III that the organism was found three times in the feces of the calf fed artificially infected milk and two times in

TABLE I—Results of guinea pig injections of calf feces. Group A. Artificially infected milk.

DATE INJECTED	GUINEA PIG	FECAL FILTRATE INJECTED SUBCUT.	CALF 1			CALF 2		
			LESIONS	SERUM REACTION	CULTURES	LESIONS	SERUM REACTIONS	CULTURES
3-5-23	0	1.5 cc	No	—	—	No	—	—
3-10-23			Started feeding artificially infected milk.					
3-23-23	1	1.5 cc	Yes	Blood lost	+	Yes	+	+
3-26-23	2	1.5 cc	Yes	+	+	Yes	+	+
3-30-23	3	1.5 cc	Yes	+	+	Yes	+	+
4-2-23	4	1.5 cc	Yes	+	+	Yes	+	+
4-6-23	5	1.5 cc	Yes	+	+	Yes	+	+
4-9-23	6	1.5 cc	Died 4-16—Injection abscess*			Yes	+	+
4-13-23	7	1.5 cc	Yes	+	+	Died 4-18—Not cultured		

*Not cultured

TABLE II—Results of guinea pig injections of calf feces. Group B. Artificially infected milk

DATE INJECTED	GUINEA PIG	FECAL FILTRATE INJECTED SUBCUT.	CALF 1			CALF 2		
			LESIONS	SERUM REACTION	CULTURES	LESIONS	SERUM REACTION	CULTURES
10-29-23	0	1.5 cc	No	—	—	No	—	—
	0		No	—	—	No	—	—
10-30-23			Started feeding artificially infected milk.					
11-2-23	1	1.5 cc	No	—	—	No	D. 12-4	—
	1		No	—	—	No	—	—
11-6-23	2	1.5 cc	Died 11-15		—	No	D. 11-15	—
	2				Records lost	Yes	+	+
11-9-23	3	1.5 cc	No	D. 11-17	—	No	D. 11-24	—
	3		No	—	—	No	—	—
11-13-23	4	1.5 cc	No	D. 12-4	—	No	D. 12-5	—
	4		No	—	—	No	—	—
11-17-23	5	1.5 cc	No	D. 12-4	—	No	D. 11-23	—
	5		Yes	+	+	Yes	+	+

TABLE III—Results of guinea pig injections of calf feces. Group C. Naturally and artificially infected milk

DATE INJECTED	GUINEA PIG	FECAL FILTRATE INJECTED SUBCUT.	CALF 1			CALF 2		
			LESIONS	SERUM REACTIONS	CULTURES	LESIONS	SERUM REACTIONS	CULTURES
2-20-24	0	1.5 cc	No	—	—	No	—	—
	0		No	—	—	No	—	—
2-21-24			Started feeding artificially infected milk.			Started feeding naturally infected milk.		
2-25-24	1.	1.5 cc	Yes	+	+	No	—	—
	1		Yes	+	+	No	—	—
2-28-24	2	1.5 cc	No	—	—	No	—	—
	2		No	—	—	No	D. 4-4	—
3-3-24	3	1.5 cc	No	D. 4-4	—	No	—	—
	3		Yes	+	+	No	D. 4-1	—
3-6-24	4	1.5 cc	No	D. 3-20	—	Yes	+	+
	4		No	—	—	Yes	+	+
3-10-24	5	1.5 cc	No	—	—	Yes	+	+
	5		No	D. 4-5	—	Yes	+	—
3-13-24	6	1.5 cc	Yes	+	+	Yes	+	—
	6		No	—	—	Yes	+	—

the calf fed the naturally infected milk. We considered the results positive when either the guinea pig serum contained agglutinins or when the organism was isolated from the pigs.

Despite the fact that others have reported heavy guinea pig losses from fecal injections of this nature very few died in our experiments from such causes. This may be accounted for by the fact that the emulsion of feces was filtered through paper, and possibly also by the fact that in all of the experiments the calves remained apparently healthy with no indications of an abnormal intestinal flora.

None of the calves showed any agglutinins for *Bact. abortum* as a result of ingesting the organism. The milk from the cow discharging the germs showed a low agglutinating titre, being positive in only 0.02 and 0.01 cc.

The examination of the tissues of the calves for the presence of the organism was not comprehensive and was rather incidental to the other work. However it will be noted in tables IV and V that *Bact. abortum* was found in the head glands of calf 2, in group "B," and in the head glands of both calves in group "C," 17 and 19 days respectively after the infected milk was discontinued. It should be observed also that one of the calves in the latter group drank milk from a cow whose udder was naturally infected. These periods for the persistence of the organisms in the tissues were well within the limits found by Carpenter.⁶

Whether the discharge of *Bact. abortum* in the feces of calves fed milk containing the organisms has any significance in the spread of abortion is a problem not yet solved. It would seem, however, that it may be a factor that should be considered in any well organized plan of control, based upon isolation. Certainly in the contamination of watering troughs and watering places in pastures, suckling calves could become the connecting link between the udder discharging the organisms and the digestive tract of the non-infected members of the herd. Theoretically other means of dissemination by the calf can be considered but are probably inconsequential in any infected herd, because of the numerous other means by which the disease may be spread.

CONCLUSIONS

1. *Bacterium abortum* passed through the entire digestive tract of suckling calves fed milk either artificially or naturally infected.

2. The organisms retained their virulence for guinea pigs after passage through the digestive tract of the calf.

3. *Bact. abortum* remained in the lymph glands of the head region for 17 and 19 days respectively, in groups "B" and "C," after discontinuance of the infected milk.

4. Agglutinins did not appear in the blood sera of the calves fed infected milk for periods ranging from 15 to 21 days.

We are indebted to Mr. Roscoe Clowes, who assisted in carrying out the work in group "A," and to Mr. William Grieve, whose careful attention in feeding and caring for the calves generally, kept them in a vigorous state of health.

REFERENCES

- ¹Birch, R. R. and Gilman, H. L.: A study of the Bang abortion disease in cattle. Rpt. N. Y. State Vet. Coll., 1922-23, p. 62.
²Hart, G. H.: Methods of controlling abortion. Calif. Agr. Exp. Sta. Bul. 353 (1923).
³Schroeder, E. C.: Bureau of Animal Industry investigations on bovine infectious abortion. Jour. Amer. Vet. Med. Assn., lx (1922), n. s. 13 (5), p. 542.
⁴Connaway, J. W.: Facts relating to infectious abortion in cattle and swine; and their practical application. Jour. Amer. Vet. Med. Assn., lxii (1923), n. s. 15 (6), p. 719.
⁵Cotton, W. E.: Discussion of Connaway. Jour. Amer. Vet. Med. Assn., lxii (1923), n. s. 15 (6), p. 728.
⁶Carpenter, C. M.: *Bacterium abortum* invasion of the tissues of calves from the ingestion of infected milk. Corn. Vet., xiv (1924), 1, p. 16.

NEWS ITEMS

Muscatine, Iowa, recently passed an ordinance requiring the owners of dogs to have them vaccinated against rabies, following the biting of six children by a rabid dog in that city.

Drs. W. H. Emig and F. W. Morgan, of Chattanooga, Tenn., have been made the defendants in a \$20,000 damage suit brought by a dairyman in whose herd the veterinarians found a cow infected with tuberculosis. The dairyman refused to allow the animal to be branded or to have her slaughtered. His premises were quarantined, and it is his contention that the quarantine ruined his business.

Veterinarians in sixty-one counties in Illinois tested 43,438 cattle for tuberculosis during the month of September, according to the monthly report of the United States Department of Agriculture. The figure indicates that the number of animals tested has almost doubled in a year.

A survey made by the United States Department of Agriculture has revealed the fact that there are 1,200,000 "city" cows in the United States as against 25,556,000 "country" cows. Last year these cows produced 110,000,000,000 pounds of milk, an average per cow of 4,260 pounds.

RINDERPEST IN AUSTRALIA

By E. A. WESTON, Perth, Western Australia

On November 14, 1923, I received the following wire from Fremantle, which is the principal port of this state and is situated some twelve miles from the city of Perth:

"Serious outbreak in dairy cows two dairies. Could you attend? Sixteen deaths. Burton."

The sender of the wire was a veterinary practitioner who had served under me in the war as a farrier sergeant. He is not a qualified man, but spent several years in an up-to-date veterinary hospital prior to the war, and is now practicing at Fremantle. I returned from abroad, broken in health, in 1916, and have never been able to resume work, but have continued to take an interest in my profession, and am occasionally consulted in reference to obscure cases.

On Nov. 15, I drove to Fremantle, and in company with Mr. Burton visited one of the affected dairies where three of the dairymen were interviewed, and the following particulars learned. The dairies were situated on a large commonage through which several roads ran. The individual holdings ranged from two or three acres up to ten. On the holdings the buildings were situated, and here the cows were milked and fed, and were usually confined during the night. In the daytime they ran on the commonage where, at this period of the year, good feed existed.

The principal road adjoining the dairies was used a good deal for sheep, which came down from the northwest parts of the State, and were driven out to the Midland markets, situated about twenty miles from Fremantle, at the extreme eastern boundary of the metropolitan area. Fremantle forms the western extremity, and Perth is situated midway between the two.

During certain periods of the year large shipments of cattle come from the northwest, the farthest port of which is Wyndham, some 1500 miles north, and these are landed at Fremantle for sale and slaughter. They frequently bring down cattle tick, and sometimes pleuropneumonia with them, consequently I had tick fever and pleuropneumonia in my mind when I went to Fremantle.

I found that 25 cows had already died, a large number were obviously ill, and a further lot, though showing no clinical

evidence of disease, were running temperatures from 104 to 106° F., and were evidently in the incubative stage of the disease. Mr. Smith, who was the first to observe the disease, had lost fifteen out of thirty cows in milk, and his losses were still continuing. The deaths had started on Oct. 30, and a bull which had never been out of the yard was among the early victims. Calves on the bucket were also reported to be dying. The cows were being fed on bran and chaff, which had been recently changed, owing to poisoning being suspected. The change had not, however, checked the mortality.

None of the dairymen had seen any stray northwest cattle in the district, nor were any ticks present. The symptoms noted by Mr. Smith were a sudden drop in milk, with starey coat and loss of appetite; the animals ran at the nose, and breathed heavily with a grunt. In the later stages foam flecked with blood was blown from the nostrils. After about three days scouring set in; the animal gradually got weaker, and went down. Death occurred in from five to eight days after the first symptoms were noted.

EARLY CASES

Messrs. Shepherd Bros. had a herd of 65 cows, and a number of young stock. Early in the month five calves, shut in a small paddock of about an acre, had been noticed ill. They breathed heavily, foamed at the nostrils, and then started scouring. Two of these calves died, and three recovered. Later some of the cows were noted to be affected. They were empty when brought in from the run, and went off their milk. At first they would eat a little and chew the cud, but gradually the breathing became distressed; coughing started; they went right off their feed, and started scouring. Two had died up to the time of my visit, the disease having run much the same course as that described by Mr. Smith. The cow which had been blistered had recovered. There were several cows in this herd obviously ill, and a further number running high temperatures.

The third dairyman present had only one cow sick at the time of my visit, but the disease was not long in spreading to other animals. All the dairymen had been in business for many years, and a large proportion of the cows had been reared on the premises. No fresh stock had been purchased by any of them within the preceding six months, but of course their cows came into contact with numerous other animals on the commonage, which I learned later was used as a dumping ground for animals dying

in the neighborhood. The carcasses were often thrown into old saw-pits, and partially buried.

Messrs. Shepherd Bros. were feeding bran and Neggitt's linseed meal, and Mr. Morrison the same, with the addition of chaff. The milk-cart horses were receiving the same bran and chaff as the cows, which effectually disposed of the poisoning theory so far as those fodders were concerned. The commonage was reported to be free from poison, though there were a good many lupines on portions of it. However, the death of the bull and calves put poison plants out of the running, quite apart from the fact that the disease was obviously an acute, infectious one.

SYMPTOMS

The first animal which I examined was a calf. It was lying in one of the stalls, and showed marked emaciation, with profuse diarrhea, dry harsh coat; difficult, rapid breathing and a temperature of 103.8° . The mucous membranes were deeply injected, the conjunctivae showing numerous ecchymoses, while the nasal were of a purple hue. The buccal mucosa was being shed in patches, especially around the lips and gums. Where this process was complete, numerous ulcers, with irregular borders, had resulted.

A cow in which the disease was at its height was next seen. She was standing in the yard breathing heavily, each expiratory effort being accompanied by a short grunt. Her eyes were sunken, and her coat harsh, but the diarrhea was not so profuse as in the case of the calf. Her mucous membranes, including those of the anus and vulva, were inflamed and injected, those of the eyes and nose resembling the condition seen in the calf. The mouth, however, was in a much worse state, being acutely inflamed and covered, over the gums, roof, and inside of the cheeks, with the raw patches previously described. Temperature was 105.4° .

A postmortem was now made on a cow which had last been seen alive at 8 p. m. the previous night. The carcass was not blown, there was no discharge from any of the orifices, and no evidences of putrefaction. The mucous membranes were deeply injected, and the mouth excoriated in the manner previously described. The mucosa of the trachea was actually inflamed with submucous hemorrhages, and flakes of blood-stained mucus scattered throughout its length. There was an acute double

pneumonia, with engorgement, and early hepatization of the small anterior lobes. There was no pleurisy or pleuritic fluid, and no subserous hemorrhages. The heart was normal, and had stopped in diastole. There were no hemorrhages into any of the lymphatic glands in any part of the body, but some glands appeared softened. The spleen was normal, the liver enlarged and showing cloudy swelling. The gall-bladder was full. There was a superficial abscess in the liver, from a nail that had penetrated the wall of the reticulum. Apart from three nails in the reticulum, this organ and the omasum were normal. The abomasum was acutely inflamed, the inflammation extending for some distance into the duodenum. There were patches of inflammation throughout the rest of the bowel, but nothing to compare with that seen in the abomasum. The kidneys were normal. The blood was dark, but soon reddened on exposure to the air, and clotted freely.

LABORATORY SPECIMENS TAKEN

I had brought down sterilized bottles, slides, spirit lamp, etc., and took smears of blood and mucus from the lung, a blood smear from the heart; samples of blood from lung and heart, and portions of lung, lymphatic glands, etc. A blood smear was also taken from the ear of a sick cow.

The owner of the bull had already had the advice of a practitioner from Perth and, on Nov. 8, the local stock inspector had been called in. The dairymen were very anxious to know if I could tell them what the disease was. I stated in reply that it was an acute, infectious disease, the nature of which could not be definitely determined until the specimens had been studied in the laboratory, but I suspected a lung form of septicemia hemorrhagica (broncho-pneumonia), although the postmortem lesions were not typical of that disease.

The condition of the mouth puzzled me, and of course suggested rinderpest, foot-and-mouth disease, or malignant catarrhal fever, but I had no reason to believe that these diseases were present, or had ever been present in Australia, and was not disposed to consider them seriously until more probable diseases had been ruled out.

On my return home I immediately wrote a report on the disease to the Chief Inspector of Stock, Mr. R. E. Weir, naming it an acute, infectious pneumo-enteritis of uncertain origin, and giving history, postmortem notes, and particulars of specimens

taken. In the morning I waited on the Commissioner of Public Health, Dr. R. E. Atkinson, who is an old friend of mine, and on learning that the Chief Inspector of Stock was absent, work was immediately got under way in the Board of Health laboratories.

The smears were stained and examined, and aerobic and anaerobic cultures made of the blood and tissues. The smears proved to be singularly free of organisms, but the cultures yielded various bacteria, prominent amongst which was a small, ovoid organism, a facultative aerobe, which in both tubes and slants gave a growth macroscopically resembling that of the setipemia hemorrhagica organism. It did not, however, exhibit the typical bipolar staining in the smears made. This is not uncommon in cultures of this organism. In order to determine its pathogenicity or otherwise, three guinea pigs were inoculated, two intraperitoneally, and one intratracheally. The latter was not altogether a success, some of the fluid entering the trachea, and some the subcutaneous tissues. I was anxious to inoculate rabbits, but guinea pigs were the only animals available. The Public Health Department has no accommodation for large animals, and the Veterinary Department has neither laboratory, experiment farm, nor indeed any modern equipment of any kind. It has never employed a veterinary pathologist, and its whole veterinary staff consisted of three permanent, and one temporary officers, all of whom were located in the metropolitan area.

GUINEA PIG INOCULATIONS

One of the guinea pigs which had been inoculated intraperitoneally on the 17th was found dead on the 18th, and I made a postmortem in company with Mr. A. M. Clark, government veterinary surgeon. Careful notes were made but as they showed nothing of interest, and certainly no symptoms of septicemia hemorrhagica, I will not reproduce them here. Cultures were made from the pleural fluid and heart, and gave a free growth of *Bacillus pyocyaneus* and a Gram-negative bacillus. The latter was later inoculated into a guinea pig without result. A bipolar-staining cocco-bacillus was observed in a smear from the spleen, but did not grow in the cultures. The two other guinea pigs inoculated at the same time as the dead one remained healthy.

On the 19th I motored to Fremantle with Dr. Sale, government bacteriologist, and Mr. Clark and in company with Mr.

Burton we conducted two further postmortems. The Chief Inspector of Stock had returned the day previously, and conducted two postmortems with Mr. Burton on slaughtered animals. Over the phone I learned that no lung lesions had been present in these, and I was anxious to confirm this, while Dr. Sale wished to take specimens and make cultures on the spot, from freshly slaughtered animals

POSTMORTEM HELD

The first animal postmortemed was a calf about four months old. It had been ill for some days, and was running a temperature of 105° F. It showed evidence of diarrhea, rapid breathing, and salivation. The mucous membranes of the eyes and mouth were pale; the buccal membranes showed shedding of the mucosa in patches, and irregular raw ulcers around the teeth and gums, but this did not extend to the rest of the mouth. The nasal mucosa was deeply inflamed and of a purple color. No marked changes were revealed on postmortem. The abomasum was slightly congested, but the glands, lungs, liver, spleen, kidneys, blood etc., were macroscopically normal. Dr. Sale took samples of blood, spleen, glands, etc., and inoculated several tubes on the spot. I have seen a good deal of septicemia hemorrhagica in calves, and this postmortem, following the inoculation results in the guinea pigs, did much to dissipate finally my first idea regarding the nature of the disease.

The second postmortem was made on a brindle cow, which showed all the acute symptoms previously described in the account of my first visit. In addition there was some subcutaneous emphysema over the back and loins, which proved on postmortem to be free from serous or bloody exudate. The cow was knocked on the head, and then had her throat cut. Dr. Sale took blood from the spurting arteries, and ran some similarly into tubes containing culture media. The postmortem revealed injected mucosae, plum-colored in the nose, marked superficial sloughing, and excoriation of the buccal membranes, not noticeable however on the tongue, but affecting the filiform papillae of the cheeks, and the roof of the mouth severely. The glands of the head were apparently normal. The rumen, reticulum and omasum showed no marked changes, but the abomasum was acutely inflamed, and of a purple hue. The small bowels were slightly inflamed in patches, and the large bowels the same. The ileocecal valve contained a plug of clotted blood. The

inflammation of the rectum and vulva was marked, however, and approximated that of the abomasum. The lymphatic glands, liver, spleen, and kidneys were apparently normal. The uterus contained an embryo. There was no peritonitis, or subserous or glandular hemorrhages. The blood was apparently normal. The mucosa of the trachea was acutely inflamed, with ecchymoses and subserous hemorrhages. The lungs were normal, except for well-marked interlobular emphysema. There was no pleurisy, or subpleural hemorrhages. The heart was normal. Dr. Sale took a further series of specimens from this cow, and an early return was made to the laboratory to get the cultures into the incubator.

RINDERPEST SUSPECTED

During the time that had elapsed since my first visit I had given very careful thought to the question of arriving at a diagnosis. The disease was spreading fast through the affected herds, and beginning to make its appearance in others in the vicinity. Obviously it was infectious and exceedingly malignant, and it was vital to determine its nature and take measures to check its spread, before it reached our pastoral areas and spread northwards, towards the great unfenced cattle runs. As a result of these considerations I had spent my time in reading up everything available on toxic gastritis, septicemia hemorrhagica, foot-and-mouth disease, malignant catarrhal fever, and rinderpest. In addition to the usual text books such as Williams' "Veterinary Medicine," Hutyra and Marek's and Friedberger and Frohner's veterinary pathologies, Wallis Hoare's "System of Veterinary Medicine," and Law's "Veterinary Medicine," I had a number of reports and pamphlets from India, Egypt and the Philippines available at the University. From a perusal of these it seemed to me that the symptoms, course of the disease, and postmortem findings fitted in very well with those seen in acute rinderpest.

The mouth lesions figured in Hutyra and Marek, from the report of the English Commission, corresponded exactly with those seen in the affected cattle. Having never seen either rinderpest, foot-and-mouth disease, or malignant catarrhal fever, I had to be guided by the experience of others. The disease was too malignant for foot-and-mouth disease, in addition to which there were no visicles, salivation, or foot lesions. There were no nervous symptoms, eye lesions, or croupous deposits, such as are described in malignant catarrh, and that disease is not likely

to occur under our conditions of bright sunshine, equable climate, and open-air living. Toxic gastritis appeared to be ruled out by the history and evident infectivity of the disease. I had also had some experience with mycotic gastritis, and the course and spread of this disease did not correspond with any cases I had seen.

The diagnoses made by the previous investigators had been metallic poisoning and impaction of the omasum. The metallic poisoning theory was later disproved by the results of the analyses of the feed and stomach contents, which had been forwarded to the government chemist. Owing to the manifestly infectious nature of the disease, I never seriously considered it, though it was not an unreasonable diagnosis for anyone seeing a single case in the later stages and having no knowledge of the history of the outbreak.

BLOOD CULTURES STERILE

Late on the afternoon of the 20th I visited the laboratory, and on arrival was informed by Dr. Atkinson that all the blood cultures were sterile. Of the calf's organs the culture from the spleen was sterile, and that from the liver showed one colony of staphylococci. Of the cow's organs the spleen culture showed one colony of staphylococci; the liver a Gram-positive coccus, and a Gram-negative staphylococcus; one culture from the stomach the same, and the other a Gram-negative bacillus of the colon type, which also appeared in the heart culture. I had suggested to Dr. Sale the making of stomach cultures from the submucosa by the technic used by Gaiger in his work on braxy, as I thought that this would likely reveal the presence of any invading organisms if such were present. A guinea pig, inoculated with heart blood from the cow, and three others, inoculated with arterial blood from the cow and calf, were apparently normal. Two of these guinea pigs were killed on the 21st when in apparently good health. They showed some blood-stained fluid in the peritoneal cavity and apparently congested kidneys. Cultures made from the spleen, liver, and heart blood yielded nothing of interest.

Following on the laboratory findings of the 20th, the next step should have been the experimental inoculation of some cattle. This was, however, out of the question because the Department had no place where such work could be undertaken. Time too was pressing. That morning I had received a wire

from Mr. Burton telling me that ten more cows were dead in Shepherd's herd, and I had information of the spread of the disease to others in the vicinity. Furthermore there was a likelihood of cattle from the affected herds being sent into the market at any time. Under these circumstances I decided to give an opinion based on such data as were available. Mr. E. A. LeSouef, B. V. Sc., Director of the Zoological Gardens, and Associate Lecturer in Veterinary Science at the University, with whom I had discussed the matter over the telephone, had kindly come across to the laboratory to see me and examine specimens of the lesions, and Mr. Clark was also present.

After discussing the matter fully with them I forwarded a further report to the Chief Inspector of Stock, stating, "I am of the opinion that the disease at Fremantle is rinderpest;" that Mr. Clark concurred, and that Dr. Atkinson considered that the work so far done in the laboratory supported the diagnosis. Mr. Clark took this report straight across to his chief, and Mr. LeSouef kindly undertook to interview the managers of the big stock firms; explain to them the seriousness of the position, and urge on them the necessity of submitting to any restrictions imposed by the Stock Department without demur. On my way home I met the Chief Inspector of Stock, who told me that he had decided to slaughter the affected herds, and that he was recommending this, together with quarantine of the affected area, stoppage of all sales or movements of stock, and the provision of money for compensation.

ASSISTANCE REQUESTED

As I was of the opinion that the wretchedly understaffed Department here would require help in dealing with so serious a situation, I wired to the Federal Director of Quarantine (Dr. Cumpston) on the 21st.

"Disease cattle Fremantle undoubtedly rinderpest. Strongly urge you send over best man available Australia assist eradication. Advise Commonwealth help funds compensate slaughtered stock."

No reply to this wire having come by the 23rd, I wired Mr. W. A. N. Robertson, Chief Veterinary Officer of Victoria.

"See Cumpston. Impress him necessity sending first-class man assist eradication rinderpest. I diagnosed disease, assistance government bacteriologist. Clark agrees diagnosis. Bacteriologist doing further work."

Every effort was made to impress on the government the seriousness of the position. The heavy mortality at Fremantle had attracted the attention of the press, and both Mr. Le Souef

and I were interviewed in reference to the matter, and stressed its seriousness.

On the 22nd I visited the area, in company with Dr. Sale. Slaughtering was in full swing, but unfortunately the organization was faulty, and the carcasses were not being disposed of quickly. Two cows showing no evidence of disease except a rise in temperature of 105.5° and 106° F. respectively were slaughtered and a postmortem made. Both cows showed acute inflammation of the abomasum, which was of a deep purple color. One stomach showed patches of superficial ulceration. The inflammation extended a short distance into the duodenum. Beyond this there was nothing of note. Mouth lesions had not yet developed. Dr. Sale took samples of blood from spurting arteries, and inoculated tubes directly from these and the heart. In addition, from cow 1, two cultures were made from the abomasum, one from the spleen and one from a lymphatic gland. Pieces of spleen and gland were also put in fixing fluid for sectioning.

FURTHER CULTURE WORK

From cow 2, two cultures were made from abomasum, one from posterior, one from anterior end, by Gaiger's technic, and from one a piece of submucosa was taken; one culture from spleen; one from pus in small pocket on exterior of abomasum. A piece of spleen was put in fixing fluid. The culture medium used was beef peptone agar.

The result of these cultures was as follows: Blood cultures from both cows proved sterile except an agar slope from cow 2, which showed two colonies, later identified as a non-pathogenic organism of the *pasteurella* group. Abomasum cultures sterile, except colon organisms from lower end (cow 1). Abscess of abomasum in cow 2 yielded a *staphylococcus*.

This ended my connection with the disease in the field, as owing to physical disability I was unable to take any part in the active stamping-out operations, but I subsequently saw a great many specimens that were brought to the laboratory. Amongst these were ulcerations of the pharynx and abomasum, pronounced "zebra" markings in the rectum, and the so-called "blue ulcers." These are not ulcers at all, but apparently circular infarcts in the mucosa. Those I saw varied in diameter from one-quarter to one-half inch. At this stage I was asked by the government to direct an inquiry into the origin of the disease,

and was engaged on this during the time that stamping-out operations were in progress.

The Commonwealth authorities had wired, asking that a number of inoculation experiments be carried out, but there was no place available where such work could be undertaken, and the Commonwealth subsequently had to make some buildings of their own available. On the 28th Mr. W. A. N. Robertson arrived to represent the Commonwealth, and Mr. A. C. Loxton, Chief Veterinary Officer of South Australia, accompanied him to carry out investigations on behalf of his government. These gentlemen were taken in hand by the Chief Inspector of Stock, visited the infected area, and were shown numerous cases of the disease. Several fresh dairies were infected, and the private cows which had been running on the commonage began to develop the disease one after another, so that there was no lack of material.

Some suspicious cases had also occurred at Belmont, among some young cattle running on unfenced land there. Belmont is on the south side of the river Swan, on which Perth is situated, and stock driven through the infected area at Fremantle, on their way to Midland Junction markets, passed through Belmont, and had, I believe, grazed over the area where these young cattle were now dying. Unfortunately the Belmont cases were seen only when moribund, and it was difficult to say definitely whether the disease was a simple gastro-enteritis, or the same specific infection as at Fremantle. Some delay occurred owing to this, but later the diagnosis was definitely established, and the same measures of slaughter and quarantine were put into operation.

POSITIVE DIAGNOSIS WITHHELD

While commending the measures taken, Messrs. Robertson and Loxton expressed no definite opinion regarding the identity of the disease, but awaited the coming of the Federal Director of Quarantine, who was accompanied by Major Sanderson, of the New South Wales veterinary staff, and Mr. Leonard, a retired veterinary surgeon. Major Sanderson had had extensive experience with rinderpest in South Africa, and Mr. Leonard in Siam, where he had been chief veterinary officer for a number of years.

Cattle had been inoculated with blood, and mouth and nose washings, and pigs fed on the organs of infected cows. Several of these had developed symptoms of the disease, and some cows

which had contracted the infection naturally were also being kept for these gentlemen to examine. On arrival they inspected these cases, and a calf which had been inoculated with 5 cc of blood from a sick cow, ten days previously, was slaughtered for postmortem. This calf had developed typical symptoms of rinderpest, commencing with a rise of temperature to 104° F. on the morning of the fourth day following inoculation. The temperature rose to 107° F. on the seventh day, and had fallen to 104° at time of slaughtering. It may be mentioned here that four pigs fed on the blood and organs of diseased cows had developed high fever with temperatures running up to 107° F. They showed symptoms of scouring and running from the eyes and nose and, on postmortem, lesions stated to be typical of rinderpest.

RINDERPEST DIAGNOSED

Following on the calf, a naturally infected cow was post-mortemed, and a large collection of specimens examined at the laboratory. A meeting was now held of Messrs. Robertson, Loxton, Sanderson, Leonard, and the Chief Inspector of Stock (Mr. R. E. Weir), with the Federal Director of Quarantine (Dr. Cumpston) presiding. At this meeting it was unanimously agreed that the disease was undoubtedly rinderpest, and certain measures for its suppression were recommended. Chief among these were the slaughter of all cattle, sheep, goats, and swine within one mile radius of any center of infection, and the continuance of perfection of the quarantine measures already inaugurated. Further, the meeting did not recommend the use of serum at the present juncture. This corresponded with my own views as expressed in the press at the beginning of the outbreak.

In consequence of the Belmont outbreak the Midland markets had been closed, and the quarantine extended to a thirty-mile radius around Perth. An outer patrol, with guards on all bridges and roads, was maintained and an inner one kept constantly moving around the immediately infected areas. Nothing was allowed to leave these areas, even bags and vegetables being stopped, and the sale of the latter restricted and made subject to special permit. The meeting of veterinary officers took place on December 11, and on the 13th a Board of Control, with Mr. W. A. N. Robertson, Commonwealth representative, as chairman, was appointed to carry on the work of stamping out

the disease. There is a great area of open country around Perth, and bushmen were put on to muster all stock running loose, while slaughter of stock within the mile radius of infected places was pushed on. Five more veterinary officers were placed at the Board's disposal, four of them being loaned to the Western Australian Government by the government of the eastern states.

Naturally the restrictions aroused a great deal of hostility, but on the whole the people responded very well to the government's appeal for cooperation. Shortly after the appointment of the Board the disease spread across the river, from Belmont to Bassendean, where it appeared amongst a dealer's herd. Prompt slaughter was again put in operation, over two hundred cattle being disposed of within a few days.

The last place to be infected was Rottnest Island, a holiday resort lying some miles outside of Fremantle Harbor. A herd of cows is maintained at the government hostel there, and a number had recently been purchased from the Bassendean dealer referred to above. The disease broke out amongst them at the end of December, and all the stock on the island had to be slaughtered.

FURTHER INOCULATION EXPERIMENTS

Early in the outbreak Mr. Campbell, B. Sc., of the Agricultural Department, was transferred to the Board of Health to assist Dr. Sale, and they continued to work at the bacteriology, with fresh material obtained from the various outbreaks, but nothing of interest transpired. Some attempts were made at inoculation with filtrates. The first lot were abortive, owing to faulty technique. The second lot were made with 2 per cent serum in normal saline, passed through a Chamberlain F candle filter, tested successfully against a mixture of *B. coli*. Six days after inoculation of this second lot the experiment station was closed. Up to that time, however, none of the animals had developed the disease. So far as I can gather from the literature, filtration results in this disease are not at all reliable. Had there been a proper experiment station here, the matter could have been pursued further, but the authorities were loath to introduce the infection into the buildings they used, and apparently did not wish to maintain it there once the disease had been reproduced experimentally and identified by professional men who were well acquainted with it.

One rather interesting episode occurred during the outbreak.

A fat bullock from the Murchison, which is a big district some 600 miles north of Perth, when slaughtered at the northern abattoirs, some sixty miles from here, showed inflammation and ulceration of the abomasum. There was no reason to think that this bullock had ever been near any infection, but some anxiety was naturally felt. Mr. Clark, who has had experience in the Northwest, stated that ulceration of the stomach was not at all uncommon amongst cattle there. A mob of Murchison cattle were being slaughtered in the Metropolitan abattoirs, and Mr. Clark was sent to examine these. He brought back a number of abomasums all of which contained ulcers. They were quite evidently traumatic, though infection had taken place in some, causing sloughing and extension. There was no general inflammation of the stomach accompanying them, and surprisingly little local reaction, even in the immediate vicinity of the ulcers. Mr. George Day, the meat inspector, informed me that the contents of the rumen in many of these cattle was so full of prickles that it was distinctly unpleasant to insert the hand amongst it, and no doubt these prickles were the cause of the ulcers.

In suppressing this rinderpest outbreak, between twelve and thirteen hundred cattle were slaughtered, besides a number of pigs, and a few sheep and goats. The cost of the whole affair will run into about £50,000. We are very lucky indeed that it is not ten times that amount. Fortunately the dairymen first affected were intelligent men, who could use a thermometer, and interpret the results obtained. One of them actually withdrew fourteen valuable young cows which he had entered for the sale, rather than run the risk of spreading disease. Another man, who had moved his young stock to the far side of the commonage, entered them for sale, but was just too late to get them in. Before the next weekly sale came round, the quarantine was on. Both these lots of cattle subsequently developed the disease.

It is pleasing to add that the owners received full compensation for all the stock slaughtered, though the delay in announcing the policy added considerably to the difficulties encountered in enforcing the regulations in the early stages of the outbreak.

Waukegan, Ill., recently passed an ordinance requiring the tuberculin testing of all cattle supplying milk to that city.

Joliet, Ill., has an ordinance which prohibits the sale of milk from all herds of cattle not under state or federal supervision.

THE POISON PLANT SITUATION IN INDIANA.—III*

By ALBERT A. HANSEN

Purdue University Agricultural Experiment Station

POISONOUS TREES

Toxic trees, to which stock losses have been traced in Indiana, are: buckeye sprouts, black locust sprouts, wild cherry, Kentucky coffee tree and oak.

Buckeye: Persistent rumors of buckeye poisoning, supposed to be due to both the nuts and the foliage, have been heard in all parts of Indiana, but particularly in the southern part of the state, for a number of years. In most cases, investigations have revealed that the trouble was really due to white snakeroot poisoning, although several genuine cases of buckeye poisoning have been discovered.

Both the fruits and leaves of the buckeye, *Aesculus glabra*, are believed to be toxic. The poisonous properties of the red buckeye, *A. pavia*, have recently been demonstrated by the Alabama Station,⁹ with the conclusion that the plant is dangerous, principally to cattle and not likely to cause trouble in horses and hogs. The Alabama Station also found that the ground nuts are toxic to fish, a use to which the plant had been put by the Amerinds. The principal symptoms described in cattle are: nervousness, dilation of the pupils and motor paralysis. Mills-paugh is quoted by Pammel¹⁰ to the effect that horse chestnut causes "inflammation of the mucous membranes of the respiratory and digestive tracts, and especially of the rectum; constant burning of the stomach and epigastrium, followed by nausea, retching and violent vomiting, with great tenderness and colic throughout the abdomen are markedly present. The buckeye is an irritant of the cerebro-spinal system, the more prominent symptoms being confusion of mind, vertigo, stupefaction and coma."

Buckeye poisoning in Indiana seems to occur principally when cattle graze upon land heavily infested with buckeye sprouts. A typical case of this character occurred on the John Sipe farm near Greenfield, during the spring of 1924. Cattle turned upon the newly cleared land became exceedingly ill and the owner con-

*Third of a series of three articles based on papers presented before the Indiana Veterinary Medical Association.

sulted Dr. N. W. Elsbury, who diagnosed the trouble as forage poisoning and ordered a change of pasture, which proved to be beneficial. In company with the writer, the pasture upon which the animals became ill was examined and a large number of sprouting buckeye stumps were found, the majority of which showed unmistakable evidence of having been heavily grazed. One symptom mentioned by Dr. Elsbury, namely the gingerly gait of the forelegs, "as though they were walking on a hot pavement," has been frequently described and the outstanding symptom by a number of Indiana farmers and veterinarians who have had experience with this form of poisoning.

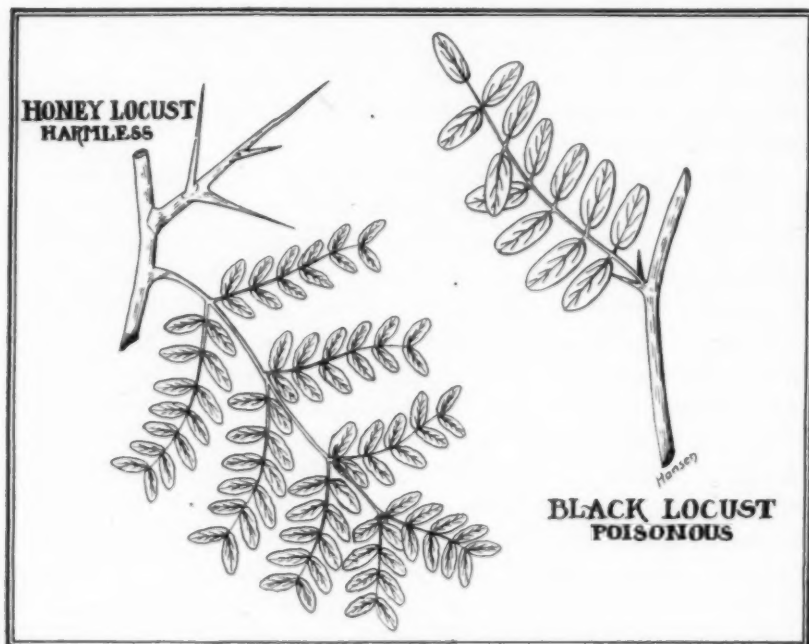


FIG. 10. Honey Locust and Black Locust

Black Locust: The bark and leaves of common black locust, *Robinia pseudo-acacia*, contains a toxic glucoside¹¹ termed robitin that seems to be particularly dangerous to cattle and horses, judging by Indiana experience. According to F. B. Power, as quoted by Holmes, the pods of this species contains a poisonous protein or toxalbumin, which Holmes states killed three sheep after they had eaten black locust pods.¹²

In Indiana, most of the trouble observed in cattle has been due to eating locust sprouts, while horses have been poisoned by

eating the bark of larger trees. One Indiana veterinarian reports the loss of four horses and four cattle from locust poisoning.¹³ He states that the symptoms in horses are colicky pains, with irregular pulse and purging, followed later by inaction of the bowels, nervous depression and collapse. The symptoms in cattle are: colicky pains, constipation, purging followed by irregular pulse, nervous excitement, and vertigo bordering on mania. However, there does not appear to be any certain symptom or series of symptoms by which locust poisoning can be definitely diagnosed, since this type of poisoning may easily be mistaken for other forms of poisoning, hence in diagnosis one must rely largely on the history of the case.

The exact conditions under which locust poisoning occurs probably are not known. It is reasonable to suppose that there is considerable variation in the poisonous properties of black locust, since the writer has observed a number of instances in which animals have grazed on the plant without harm. In the southeastern part of Indiana, black locust is perhaps the most abundant of all trees, but few of the farmers suspect the plant of being poisonous and no losses have as yet been traced to locust poisoning in this section. On the other hand, a number of cases of locust poisoning have been investigated in the central and northern parts of the state, notably in Delaware, Huntington and Whitley counties.

As a result of field experience, it appears that the succulent growth of locust sprouts, that develops after the main tree has been cut down, is most to be feared. In one case a team of horses died after gnawing at the bark of a black locust tree to which they had been hitched. The poison is very powerful and death usually results in a few hours.

A case of locust poisoning on the farm of Dr. C. M. Mix, Selma, R. 2, Delaware County, may be cited as typical. During the fall of 1922, two cows that were grazing in a certain pasture became exceedingly ill, the most prominent symptom being paralysis of the hindquarters. Neither of the animals recovered during the winter. About July 1, 1923, a valuable heifer became ill and paralysis of the hindquarters was again the outstanding symptom. This animal died ten days later. The suspected pasture was inspected during mid-July and in one corner a heavy growth of black locust sprouts was discovered that plainly showed evidence of having been grazed. Paralysis of the hindquarters

is a symptom that has been noted a number of times in connection with locust poisoning.

Black locust should not be confused with honey locust, a species not known to be poisonous. Black locust, the dangerous plant, is equipped with small spines, whereas honey locust usually possesses huge, vicious-looking, branched spines.

Wild Cherry: The leaves, bark and seeds of all species of cherry, particularly the wild black cherry, *Prunus serotina*, contain hydrocyanic acid, which is present in greatest quantity when the leaves are very young or in a wilted condition. It is similar in this respect to the formation of hydrocyanic (prussic) acid in the wilted leaves of sorghum. Dr. Chas. D. Howard, of the New Hampshire Agricultural Experiment Station, who has investigated cherry poisoning from the chemical viewpoint, is quoted by Pammel¹⁴ to the effect that both the wilted and fresh leaves are poisonous, while the dried leaves are to be regarded with suspicion.

Cases of cherry poisoning in live stock in Indiana have occurred principally from wilted leaves, following the blowing over of a tree or the breaking off of limbs during a storm, and trouble from this source may occur at any time during the growing season.

A typical case occurred on the farm of John Berberich, near Cromwell, Noble County, Indiana. Three horses died suddenly in a pasture after suffering from violent convulsions. An inspection of the pasture revealed the presence of a large cherry tree that had toppled over during a storm that raged a few days before the animals died. The tree showed clear evidence of having been heavily grazed. A cow died under similar circumstances on the farm of John Dellinger, Jeffersonville, Indiana, although in this case a large fallen limb was held to be responsible, since the wilted leaves showed plainly the effects of browsing.

The symptoms of cherry poisoning, as described by Winslow, are: giddiness, difficult breathing, slow pulse, dilated pupils, convulsions, unconsciousness, general paralysis and death. In some cases complete recovery may take place within an hour.

Kentucky coffee tree: Only one case of poisoning due to the Kentucky coffee tree, *Gymnocladus dioica*, has come to our attention in Indiana. It occurred on the farm of Lora Forkner, of Tipton. During a heavy wind a Kentucky coffee tree in his pasture was blown down and a flock of sheep browsed on the leaves. A number of the animals died within a short time. A decoction brewed from the leaves of this plant has been used in

the southern states as a fly poison. It is not believed that the plant is dangerous unless grazing animals have access to large quantities of the leaves.

Oak: Marsh, Clawson and Marsh have demonstrated that continuous feeding of oak leaves may produce sickness in cattle that may terminate fatally.¹⁵ Sickness of this character has been observed on cut-over land in Jasper and Jackson counties, Indiana, where cattle lived almost exclusively on oak sprouts. As soon as the affected animals were removed and given a change of feed, they recovered. The symptoms are severe constipation, hard feces containing mucus and blood, and emaciation. The danger from oak poisoning under Indiana conditions is not great.



FIG. 11. Characteristic scaly bulbs of Dutchman's breeches or staggerweed.
Bikukulla cucullaria.

MISCELLANEOUS POISONOUS SPECIES

Staggerweed: Frequent losses of cattle that have occurred during the early spring in the highland sections of Virginia, since the days of the first settlers, led the United States Department of

Agriculture to conduct feeding experiments in cooperation with the Virginia Agricultural Experiment Station, in order to determine the cause. The successful results of the feeding work were recently announced¹⁶ and it appears that the principal cause is a handsome bulbous plant, *Bikukulla cucullaria*, known as little staggerweed in the Virginia highlands and more commonly called Dutchman's breeches in other parts of the country.

It has been realized for some time that a poisonous plant is responsible for considerable losses of stock in the hills along the Ohio River in southern Indiana, but the species that was causing the trouble was never definitely determined. In view of the fact that *Bikukulla cucullaria* grows in abundance in the troubled section, it was decided to conduct field work during the spring of 1924, to ascertain if this species could be responsible. As a result, it appears that the Dutchman's breeches is the cause of frequent losses to cattle in southern Indiana, although two other species, squirrel corn, *Bikukulla canadenses*, and dwarf larkspur, *Delphinium tricornes*, which frequently grow in company with Dutchman's breeches, may also be important factors in this connection. All three of these plants have been called staggerweeds by farmers in the hilly sections who have been suspicious of them for a number of years.

Burt Scott, a farmer residing near Madison, had lost cattle practically every spring, apparently from staggerweed poisoning. During one season he lost seven animals from this cause. At a meeting of the local farmers, held upon the Scott farm, several reported similar losses. Reports of staggerweed poisoning have been received all along the Ohio River from Clark County to Ohio County. The Scott farm was inspected on April 22, 1924, and great quantities of Dutchman's breeches were found, together with a few patches of dwarf larkspur and squirrel corn. It appears that poisoning usually takes place before mid-May. This is due to the fact that during early spring there is but little grass and grazing animals are almost compelled to eat the staggerweeds, which appear early, due to the stored-up food in the underground bulbs. The poison exists in both the bulbs and tops and the bulbs are readily pulled out of the loose leaf-mould soil in which the plants are commonly found and they are no doubt eaten in considerable quantities.

Most of the farmers who have had experience with staggerweed poisoning agree that the most prominent symptom is the manner in which the poisoned animals stagger for a few paces,

then rest awhile and stagger some more, the pupils being widely dilated in the meantime. The symptoms described by Black, Eggleston, Kelly and Turner are: trembling, backward and forward running with the head held high, frothing at the mouth, vomiting, and convulsions. It is interesting to note that Mr. Scott claims he can now save poisoned animals by the use of liberal quantities of melted lard.

Staggerweed has also been found in other sections of Indiana. Sam Cummins, of Cambridge City, Route B, Wayne County, Indiana, has had considerable trouble whenever he turned his cattle into his woodlot to graze during March. His description of the symptoms tallied closely with the accounts of southern Indiana farmers and an investigation of the woodland pasture revealed an abundance of Dutchman's breeches. When the cows were kept out of the woods until after the grass had got a good start, no trouble was experienced.

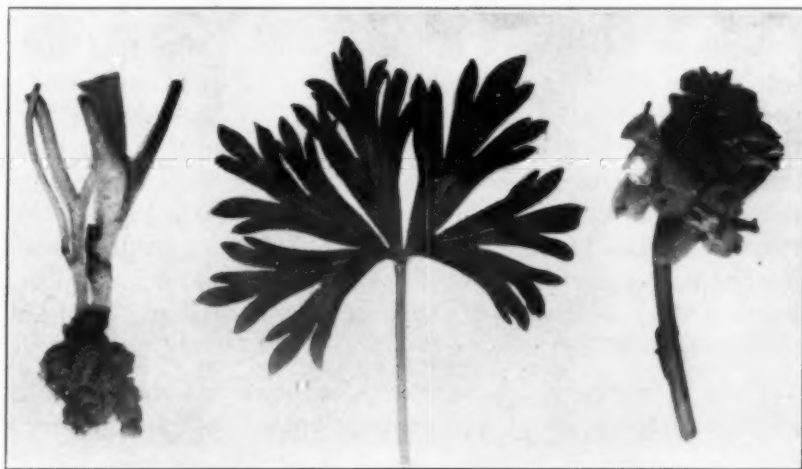


FIG. 12. Tuberous roots, buttercup-like leaf and blue flowers of dwarf larkspur

Dwarf Larkspur: Although larkspur poisoning in America occurs mainly on western grazing lands, a native species known as dwarf larkspur, *Delphinium tricorne*, causes considerable trouble in some sections of Indiana. As with Dutchman's breeches, in whose company it is frequently found, the dwarf larkspur or staggerweed appears mainly during April or May when the handsome spurred, blue to pink and white flowers are conspicuous. The foliage is five-parted and resembles the leaves of common buttercup, while a characteristic bulb may be found

underground. The plant is poisonous to cattle only and the most characteristic symptoms appear to be general stiffness of gait, followed by falling and convulsive kicking. There is usually severe constipation and difficult breathing terminating in death a few hours after the first symptoms are noted. Death is ordinarily followed by rapid bloating. Larkspur usually grows in rich moist woods and along streams.

A typical case may be cited on the farm of Frank Kenyon, Oxford, R. 3. Cattle were turned into the woods during April, 1924, and two died. The symptoms described by Mr. Kenyon were nervousness, constipation and rapid bloating after death. Patches of dwarf larkspur were found in the woods and the plants showed evidence of having been grazed. Fred Hoover, County Agent of Floyd County, recently reported the finding of large patches of larkspur that had been heavily grazed on a farm on which three cattle were poisoned, evidently from the effects of toxic plants.

Sorghum: A number of investigations have shown that members of the sorghum group are poisonous in the juvenile stage, particularly when wilted or stunted by frost or drought. The trouble is due to the formation of hydrocyanic (prussic) acid, one of the strongest poisons known. So potent is this poison that almost instantaneous death results after a small amount of free acid is placed on the tongue. Trouble from sorghum poisoning has been reported principally in the West and several of the western stations have issued special bulletins in order to warn farmers against this danger.^{17,18,19}

Three members of the sorghum group occur in Indiana, Sudan grass, common sorghum and Johnson grass. As far as the field work indicates, the principal source of trouble has been frozen, wilted, second-growth sorghum. Eleven horses were reported to have died from this cause in the vicinity of Norman Station in Jackson County and farmers in Martin County have reported numerous cases of sorghum poisoning.

A typical case occurred on the farm of Ernest Trimble, of Paoli. Four cows became ill and Dr. Paul Lindley, veterinarian, was consulted. He found evidence that the animals had pastured on frost-wilted, second-growth sorghum and from the symptoms exhibited, sorghum poisoning was diagnosed as the cause of the trouble. The following description of the symptoms was supplied by Dr. Lindley:

"The animals were at first a bit drowsy; they became weak and staggered a great deal, just like an intoxicated person. Breathing became difficult and excited, the muscles twitched nervously, the saliva flowed freely and finally the animals fell in spasms and died in a short time."

The poisonous principle disappears from the plants upon drying, or when they recover from drought. During the poisonous stage the odor of hydrocyanic acid, which is similar to the familiar odor of peach kernels, may frequently be noted in the macerated leaves, although this is not felt to be a reliable guide by which to judge the dangerous condition of the plants.



FIG. 13. Jimson weed, *Datura Stramonium*. (King)

Jimson weed: Common Jimson weed, *Datura stramonium*, is poisonous in all its parts, especially the seeds, due probably to the presence of the toxic alkaloids atropin and hyoscyamin. The former is used in medicine and is secured commercially from belladonna root, while the latter is the poisonous principle contained in the deadly henbane, *Hyoscyamus niger*. A number of fatal cases of human Jimson weed poisoning have been reported, due primarily to children eating the fruits or sucking the flowers. Two cases of this character occurred at Pleasant Lake, Indiana, and both children almost died as a result.

Poisoning of animals by Jimson weed is not common, since the plant possesses a repugnant odor and highly unpleasant taste.

Just what the conditions are under which farm animals will eat Jimson weed is not known. In the cases on the farm of John Effinger, near Evansville, Indiana, where five hogs died from the effects of eating Jimson weed, the trouble was evidently caused by a lack of green feed, since the animals died during drought when the only green herbage available was the Jimson. A somewhat similar case occurred on the farm of John Rose, of Alfordsville, Indiana, where three hogs died. One of the dead animals was posted by Dr. G. E. Norman, of Jasper, and the stomach was found to be crammed with the leaves and green fruits of Jimson weed, together with a sprinkling of corn. Incidentally, after the Jimson was destroyed, no further trouble developed.

Judge C. H. Wills, of Kokomo, lost six cattle from Jimson poisoning on his Howard County farm during the fall of 1923. A solid half-acre patch of Jimson weed had been heavily grazed by the animals. It is possible that in this case the trouble was due to the lack of salt in the ration, although this is by no means certain.

Under ordinary conditions Jimson weed is left untouched by grazing animals and for this reason it is not thought to be highly dangerous. Both the United States Department of Agriculture and the Colorado Station report instances of the poisoning of cattle due to eating the leaves of young Jimson weed plants.²⁰

Pokeroot: All parts of pokeroot, *Phytolacca decandra*, are poisonous, particularly the roots. The poisonous principle seems to be destroyed on boiling, since the young leaves are considered excellent as greens. The plant is poisonous to cattle, sheep, hogs and horses.

A number of suspected cases of pokeroot poisoning in cattle and hogs have occurred in Indiana. In one case, on the farm of F. A. Logan, of Stockwell, pigs had been poisoned in a pokeroot infested pasture practically every spring, but as soon as the first symptoms were noted the animals were removed to another pasture. One large root showed evidence of having been grazed upon. The writer saw several of the poisoned pigs; they ran aimlessly around as though blind, staggered and were unusually docile, seeming to have no objection to being handled. The eyes were slightly inflamed.

Sneezeweed: Although sneezeweed, *Helenium autumnale*, is common in wet places in Indiana, and the plant has been demonstrated by the Mississippi Station to be poisonous, little trouble from this source has been experienced. On the farm of Dr.

Charles M. Gibbs, near Greenfield, five cows died after having been fed hay from a low, wet spot. The symptoms noted were labored breathing, followed by convulsions and death. Prominent internal lesions were found. An examination of the source of the hay revealed a heavy growth of sneezeweed.

Star flower: The bulbs of the common star flower or star of Bethlehem, *Ornithogalum umbellatum*, are strongly suspected of being poisonous. In one case, in Clarke County, cattle were poisoned by eating the bulbs uprooted by hogs. A closely related species *O. thyrsoides*, has been reported as the cause of acute gastro-enteritis in horses in South Africa. Star flower is rapidly becoming one of the commonest and most troublesome of weeds in southern Indiana.

Ergot: A few suspected cases of ergot abortion have been reported. One case that appeared to be ergot poisoning on bluegrass pasture came to our notice.

Cockle roots: A very unusual case of poisoning occurred on the farm of Henry Wing, of Waterloo. During June, 1923, four hogs died. A postmortem examination revealed large quantities of the roots of common corn cockle, *Agrostemma githago*, in the stomach of each of the four animals. Whether or not the cockle roots were responsible for the trouble is not known. The seeds of cockle are known to be poisonous.

Suspected cases: Poisoning due to the following species, all of minor importance, have been reported by mail and specimens of the plants have been received, but field investigations have not been conducted: prickly ash, *Xanthoxylum americanum*, cattle; buttonball bush, *Cephalanthus occidentalis*, cattle; bulbous water hemlock, *Cicuta bulbifera*, cattle; lobelia, *Lobelia syphilitica*, cattle; Mayapple roots, *Podophyllum peltatum*, sheep; swamp milkweed, *Asclepias incarnata*, sheep.

Poison hemlock, *Conium maculatum*, grows abundantly in several parts of the state and has even been found thriving in alleyways in Crawfordsville, but no cases of poisoning from this source have come to our attention. On account of the repugnant, mouse-like odor, the plant is rarely touched by man or beast.

REFERENCES

- ⁹Cary, C. A.: Poisonous action of red buckeye on horses, mules, cattle, hogs and fish. Ala. Agr. Exp. Sta. Bul. 218 (1922).
¹⁰Pammel, L. H.: Manual of Poisonous Plants, p. 617 (1911).
¹¹Tasaki, B. and Tanaka, U.: Jour. Coll. Agr., Univ. of Tokyo, iii (2), p. 337.
¹²Holmes, E. M.: Robinia pods poisonous to sheep. Pharm. Jour. 110 (1923), p. 263.
¹³Buzzard, D. K.: Proc. Ind. Vet. Med. Asso., 1924, pp. 28-30.
¹⁴Pammel, L. H.: Manual of Poisonous Plants, p. 317 (1911).
¹⁵Marsh, C. Dwight, Clawson, A. B. and Marsh, Hadleigh: Oak leaf poisoning of domestic animals. U. S. Dept. Agr. Bul. 767 (1919).

¹⁰Black, O. F., Eggleston, W. W., Kelly, J. W. and Turner, H. C.: Poisonous properties of *Bikukulla cucullaria* (Dutchman's breeches) and *B. canadenses* (squirrel corn). Jour. Agr. Res., xxiii (1923), 2, pp. 69-78.

¹¹Francis, C. K.: The poisoning of livestock while feeding on plants of the sorghum group. Okla. Agr. Exp. Sta. Cir. Inform. 38 (1915).

¹²Haring, C. M.: Precautions against poisoning by Johnson grass and other sorghums. Univ. of Cal. (Unnumbered bulletin).

¹³Peters, A. T., Slade, H. B. and Avery, Samuel: Poisoning of cattle by common sorghum and kafir corn. Neb. Agr. Exp. Sta. Bul. 77 (1903).

VETERINARIANS NEEDED

There are only 500 veterinary students in the United States. This means that less than three per state will be graduated each year for the next four years. This is not enough to supply the necessary number of veterinarians to take care of the growing live stock interests of this country. As we proceed in the eradication of contagious diseases, improve our methods of sanitation, and have a better understanding of the value of preventing diseases in our live stock, the larger will be the demand for skilled veterinarians. It is cheaper to spend some money for competent veterinary service than it is to permit disease to run its course.

Some local practitioners feel that when tuberculosis and other contagious diseases are eradicated, their practice will be much less. There may be here and there an instance where a veterinarian would have less practice after a community has been made free of tuberculosis and other diseases. This is not so, however, in a majority of cases. It has been shown many times that when farmers become interested in keeping their herds free from disease, they use the services of a veterinarian more than before they paid any attention to keeping their herds clean and free from disease. For instance, in Vermont in 1916 about 6,000 head of cattle were tuberculin tested by private practitioners. After the state and federal government officials had tested many herds in that state, the local veterinarians in 1923 tested over 22,000 head. In other words, because of the state and federal government's activities, the local veterinarian's practice increased nearly four times so far as tuberculin testing was concerned.

We believe some serious attention need be given to training more young men in veterinary science. If any one thinks the advancement of sanitary methods of handling stock and the elimination of contagious diseases will lessen the demands for veterinary service, he is mistaken. The facts are it will increase the veterinarian's work. Veterinary medicine is an honorable and a very necessary profession. It is growing in demand and we can commend this work to young men who have a taste and an adaptation for such kind of service.—*Hoard's Dairyman*.

INFECTIOUS ANEMIA OF THE HORSE IN MAN¹

By J. TH. PETERS

Privat-docent, University of Leyden, Holland

(Translated by L. VAN ES, Lincoln, Nebr.)

The particulars presented by the case of grave anemia, of which the clinical history will follow, are of a nature to develop our knowledge concerning the etiology of certain forms of this pathologic entity.

The circumstances which led me to examine the patient in question throw a sharp light on the difficulties of the problem, which, to my mind, can be considered as solved by the inquiry which will follow. This has induced me to render a brief account of those facts.

A short time ago Professor Wester, of the Veterinary School of Utrecht, made a communication concerning infectious or pernicious anemia of the horse. In closing his conference he brought up the question to know if, from an etiologic point of view, there would be a relation between pernicious anemia of man and that of the horse. The following fact seems to plead notably in favor of an affirmative answer:

A colleague of the lecturer, having had under treatment horses suffering from pernicious anemia, became affected with a serious anemia and the patient himself feared that his affection was identical with Addison-Biermer's disease. Less than one cubic centimeter of blood of the patient injected into a horse was sufficient to bring about the death of the latter in an irrevocable manner; the injected animal succumbed to the infectious anemia of the horse.

The period of incubation, as well as the clinical symptoms, were identical with those presented by a horse injected with blood taken from a horse affected by the disease. Three horses were injected in this manner; none of the three escaped death. The injection was made with filtered as well as with unfiltered blood, and in both cases the animals succumbed to the redoubtable disease, which speaks for a filtrable virus. This thus confirms the opinion already advanced by Carré and Vallée in 1904.

The patient, who naturally took a lively interest in the literature published on the subject, had, until then, no knowledge

¹L'anémie infectieuse du cheval chez l'homme. La Presse Médicale, Paris, 1924, p. 105.

of any publication mentioning a case similar to his, in which the diagnosis of the disease could have been confirmed by animal experiment; as in France, in the valley of the Meuse, the equine disease mentioned above is not very rare. I went for information to the parasitologist, Professor Brumpt, of Paris. The latter wrote me that the case appeared to him very worthy of interest and that he knew of no publication having dealt with cases of the disease in question in man.

I will only publish here of the very detailed verbal communications which the patient involved, furnished me that what appeared to me of importance in order to be able to recognize the nosographic picture.

The first symptoms of the disease appeared in May 1917. At that time the patient was much in contact with horses suffering with pernicious anemia. Those first symptoms were gastrointestinal: diarrhea, alternating with constipation. At that time there appeared a herpes-like exanthema on the skin of the abdominal wall. The exanthema disappeared promptly, but the intestinal symptoms persisted, only leaving, from time to time, for brief periods of respite. The presence of blood could be shown, on different occasions, in the fecal matter, after a meatless diet. A persistent headache, often even violent, established itself. It was by preference unilateral and localized in the occipital region. The appetite was reduced. There was neither aphthae on the tongue, nor icterus. Pressure upon the sternum or upon other bones was not painful. The temperature remained normal, except for rare, little marked elevations. No pulmonary or cardiac symptoms. No hypertrophy of liver or spleen.

Those symptoms persisted for a few weeks. Then appeared only lumbar pains at the same time as a generalized, but slight edema, especially notable at the eyelids. Notwithstanding, the urine did not present a trace of albumin. At no time was there hyperurobilinuria.

A general debility, loss of flesh, pallor of the face and the mucosae soon appeared.

This condition remained stationary during 1917 and 1918. It is self-evident that the patient regarded his condition as serious, all the more so as during this period one cubic centimeter of his blood was sufficient, as I have already said, to bring about, in a sure manner, the death of an injected horse.

A perceptible improvement did not appear until the beginning of 1919. The remissions, as far as the intestinal symptoms are

concerned, became more prolonged, notably as much as one to two months. In 1920 and 1921 they sometimes lasted even three months. The general condition improved very rapidly during those intervals. The color of the face became normal as well as that of the mucosae. It was for the patient a bitter disillusion to have a typical attack of diarrhea repeat itself in December, 1921. Happily, improvement was prompt, but after prolonged intervals, notably after a month, diarrhea yet occurred.

What is reassuring is the probability that the blood is no longer infectious for the horse. During the latter times the patient has injected his blood into different horses which have all remained well. As certain horses have become immune to the disease, a negative result, taken by itself, shows but little.

The examinations of the patient's blood were never made in a complete manner at the same period of the disease; now it was this, then it was some other part of the examination which was made. In agreement with the patient I decided in this not to publish tables with figures, but to give briefly the general impression which this veterinarian had received of the morphologic alterations of his blood.

During the period of anemia the number of erythrocytes amounted to less than two millions. The colorimetric index at that time was a little over one. There was a marked leucopenia.

In the stained preparations there were never normoblasts or megaloblasts. Poikilocytosis and anisocytosis could be observed. There was a normal number of platelets, among which were giant forms.

At the present time, during a period of remission, the number of red corpuscles is normal, the index still a little over one. The leucopenia is yet always manifest (last count 1800 leucocytes per c.mm.). The stained preparation impressed him as showing a normal proportion of the different types of leucocytes.

This is the clinical and hematological symptomatology, which one can observe in general in horses affected with pernicious anemia of the horse.

One sees from this that the results of this hematological examination correspond in no point to those which one finds in patients affected with Addison-Biermer's disease. Altogether in the nosographic picture described above, one has to do with a non-hemolytic anemia, while Addison-Biermer's disease is quite hemolytic. Even during the more serious relapses, all trace of hyperurobilinuria was in default. As far as the red and white

corpuscles are concerned, the patient presented the type of an aplastic anemia. All phenomena of proliferation of erythroblastic and myeloid tissue were absent.

The patient presented, all the time, certain symptoms which one, the majority of times, does not find among the forms known to us as aplastic anemia. I mention among others the appearance of diarrhea, the herpes-like exanthema of the abdominal wall, the alternating of remissions and relapses, the less serious prognosis.

On the other hand the immediately striking analogies with Ehrlich's aplastic anemia are: the absence of any symptoms of regeneration regarding both the red or the white corpuscles during the period of grave anemia; further, the leucopenia and hemorrhagic diatheses.

What pleads against the opinion that the anemia should be due to repeated and prolonged losses of blood is that this form of anemia is in the beginning accompanied by a passing leucocytosis which was always absent in the present case, in spite of repeated examinations; then again, those cases present a normal number of leucocytes, which, in the case with which we are occupied there always persists a pronounced leucopenia.

In all probability the nosologic picture which occupies us belongs to the group of anemias primarily due to a diminution of hematopoiesis.

Resuming, I believe to be able to conclude from what goes before, that pernicious anemia of horses, the disease with which our patient is affected, has nothing in common with the pernicious anemia of man, if it is not the name.

As far as the therapy is concerned, the patient had used all sorts of medicaments, but had nevertheless the impression of not having had a favorable result from any among them. He attached confidence only to *vis medicatrix naturae*.

Concerning the diagnosis of the disease in man, it will, in the beginning, be inevitable to have recourse to animal experimentation, in spite of its cost. If one lends attention to the symptoms described above, it should not be difficult to discern the cases in which this experiment will be necessary.

As the cases of grave anemia are yet frequently obscure, I believe that the preceeding clinical inquiry has produced the following results: That, in that for a special form of grave anemia, the secret of the etiology could be discovered and that the infectious agent as cause is a filtrable virus, the one of infectious anemia of the horse.

CLINICAL AND CASE REPORTS

(Practitioners and others are invited to contribute to this department reports of unusual and interesting cases which may be helpful to others in the profession.)

CASE REPORT AND TESTS ON IMPURE CHLOROFORM

By E. J. FRICK and W. T. MILLER, *Department of Surgery and Medicine, Kansas State Agricultural College, Manhattan, Kans.*

On April 24, our attention was called to the fact that the student anesthetizer and operators were experiencing a heavy mortality on their "skate" dogs. Three husky bitches, brought to the hospital by the city dog catcher for destruction purposes, were assigned to the students for laparo-metro-oophorectomy.

The first bitch was a fox terrier "in heat," and the student operator, being of a naturally slow type and forced to ligate all blood vessels, was blamed by his classmates when the bitch died before he had finished the operation. The second dog died before any incision was made. This clearly put the blame on the anesthetizer.

Thorough examination brought out the fact that the boys were using a bottle of chloroform that had been standing on an open shelf all summer. The odor and appearance of the chloroform, labeled "for anesthesia," appeared entirely good.

Bitch 3 was chloroformed, carefully watched and just when it was decided that the second stage of anesthesia was reached and the operation could commence, the respirations and heart stopped, and the patient could not be revived. The chloroform was tested and phosgene found present.

When chemically pure chloroform is exposed to the action of air and light, it undergoes decomposition slowly. Among the products formed are chlorin, hydrochloric acid and carbonyl chlorid, commonly known as "phosgene"—a toxic gas used extensively in the World War.

However, when chloroform is prepared commercially, 1% ethyl alcohol is added as a preservative to decompose any phosgene which may be formed, the alcohol combining in this case with the phosgene, to form the comparatively harmless diethyl carbonate, thus maintaining the poisonous effects of chloroform at a mini-

mum. But, unfortunately, when chloroform has not been handled properly, that is, left exposed to the air and the catalytic action of light, the production of phosgene is far in excess of the preservative action of the ethyl alcohol, and therefore a highly poisonous drug is formed which, when administered in the form of an anesthetic, can yield only uniformly bad results.

The presence of this poisonous substance can be very readily detected by the following simple tests:

1. *The silver nitrate test.* Place a small amount of the suspected material in a clean test-tube and add an equal amount of pure 1% aqueous solution of silver nitrate. Shake the mixture well and allow to stand for a moment. If phosgene is present a milky-white color will appear in the silver nitrate or a white precipitate (silver chlorid) will appear. Pure chloroform will not respond to this test.

2. *The potassium iodid test.* Place a small amount of the suspected chloroform in a clean test-tube and add an equal amount of a 5% solution of potassium iodid. Shake the mixture well. If phosgene (carbonyl chlorid) is present, the potassium iodid solution will assume a red color, varying in shade depending upon the amount of chlorin present. The red color is caused by the liberation of free iodin in the solution. This action is due to the fact that chlorin, standing higher in the electromotive series than iodine, is much more reactive than the latter, thus causing the iodine to be replaced in the solution of potassium iodid.

These simple tests may be quickly performed and will demonstrate whether the chloroform is safe to use.

DENTIGEROUS CYST IN A HORSE

By JOHN R. SCOTT, Ames, Iowa¹

Division of Veterinary Medicine, Iowa State College

On October 16, 1923, a roan horse, weighing about 1500 pounds, was brought to the Iowa State College Veterinary Clinic, with the history that the owner, about four months prior to this time, noticed an enlargement below the left eye. This swelling had gradually been increasing in size since he first noticed it. He also reported that there had been a discharge from the left nostril for the last four months.

Upon clinical examination the pulse, respiration and tempera-

¹Written while a senior student.

ture were normal. On palpation there was a firm, cold swelling located about one and one-half inches antero-ventrally to the left eye. There was a catarrhal discharge from the left nostril. The speculum was applied and the oral cavity thoroughly examined. There was noted a slight recession of the gum between the fourth and fifth upper cheek teeth on the left side. The left nostril was palpated for tumors but nothing was found. Upon percussion over the sinuses the left side gave a slightly duller sound than did the right. There was no pain when percussion was carried out on the left side, however.

Operation was decided upon. After the animal was carefully examined to see if it was in shape for operation it was confined to the stocks, stomach-tube passed through the nose and one and one-half ounces of chloralhydrate, in about two quarts of warm water, was pumped into the stomach. In about twenty minutes the effect of the chloralhydrate was noticed, so the animal was placed on the table with the left side up. The area over the maxillary sinus, extending medially to the median plane and extending backward ventral and posterior to the orbit, was cleaned, shaved and painted with tincture of iodine. Then a small area just below the facial crest and in a transverse plane through the lateral canthus of the eye was cleaned, shaved and painted with tincture of iodine. The maxillary nerve was blocked with 2% apothecin by inserting the needle just below the facial crest and in a transverse plane through the lateral canthus of the eye; the needle was inserted to a depth of about one and one-half inches, or until it struck bone, then it was directed slightly backward and the solution injected.

The mouth speculum was applied and the teeth examined. The sixth tooth was found to be absent and in its place two small embryonic teeth were found. The skin over the maxillary and frontal sinuses was injected with 2% apothecin.

The maxillary sinus was then trephined over the root of the fifth cheek tooth. Upon entering the maxillary sinus it was found that it was full of small embryonic teeth, embryonic connection tissue and cystic fluid. The teeth projected out from the walls of the sinus to which they were rather firmly attached. The fifth left superior cheek tooth was then repelled. After curetting and chiseling out as much of the embryonic tissue and tooth formation as possible the frontal sinus was trephined. The frontal sinus contained a considerable amount of pus and one large tooth; also several smaller teeth. This material was curetted

out and the sinus drained through the nasal cavity. The alveolus where the fifth tooth had been removed was packed and the animal was removed from the table. The animal showed colicky symptoms for about ten minutes after being taken off the table.

Anesthesia was good, but the operation proved quite difficult, as some of the small teeth were quite firmly attached. It was estimated that about ninety embryonic teeth were present. The animal was kept in the hospital for about one and one-half months after the operation. It was necessary to enlarge the drainage opening and to carry out ordinary wound treatment during this period.

December 9, 1923, the animal was discharged. There was a very slight discharge from the nose, the animal had gained in flesh, was in good spirits and appeared to be on the road to recovery. About two months after the animal was discharged the owner reported that he had sold the animal to a buyer. He also reported that there was a slight nasal discharge but not enough to be noticed by the discriminating eye of the horse buyer.

ANTHRAX TREATED WITH NEOSALVARSAN

In the September 20, 1924, number of *Venereal Disease Information*, issued by the United States Public Health Bureau, is the following:

"Anthrax treatment with intravenous injections of neosalvarsan. O. Gasser. *Wien. Klin. Wchnschr.*, Vienna, 1924, xxxvii, 261.

"One injection of neosalvarsan generally suffices to cure anthrax. Some rise of temperature is associated with it. The author treated 54 cases. Of this number two died of sepsis, one died right after entering the hospital, and one of pneumonia. The others were cured. This treatment is recommended for veterinary surgeons."

N. S. M.

MORE HONORS FOR DR. DALRYMPLE

At the semi-annual meeting of the Sixth District (La.) Medical Society, held at the Lady of the Lake Sanitarium, Baton Rouge, in October, Dr. W. H. Dalrymple was elected an honorary member. Dr. Dalrymple also holds honorary memberships in the East Baton Rouge Parish Medical Society and the Louisiana State Medical Society.

ABSTRACTS

SMITTSOM KASTNING (CONTAGIOUS ABORTION). Norges Offisielle Statistik, VII, 90. Veterinaervesenet og Kjøttkontrollen, Kristiania, 1921, p. 11.

In 1921 there were 1712 cases reported, as against 1816 in 1920 and 1432 in 1919. Taken as a whole several districts show a decrease in cases of contagious abortion while an increase is noticed in others. In Vest-Finnmark contagious abortion is unknown (S. Lie). State veterinarian S. Tillier, Bergen, reports that while contagious abortion has been on the decline for several years it seems now again to be increasing. In Flam, Sogn and Kaupanger almost every herd was affected. Intense educational campaigns, with at least apparent willingness for cooperation on the side of the herd owners, seem ineffective in combating the disease, due mainly to two factors, namely, the use of common pastures (ranges) and the insidious nature of the disease. Blood testing with isolation of reactors has proved inadequate. In larger herds which have had the disease several years, abortions are rare, while young animals show a tendency for sterility and nymphomania.

District veterinarian H. Gjörud of Aal, Hollingdal reports a similar experience. In his district this disease causes the greatest economic loss of all diseases. While evidence shows that it is spread through common pastures (mountain ranges), there is nothing to prove that infection is spread by the bulls that cover cows from different herds in which are clean and infected animals. On the other hand, District Veterinarian O. Ugdal Grimstad reports: "Abortion in cattle is decreasing strongly. In the past year not a single case has occurred. The farmers have become awake to the danger of infection and report willingly every case in order to get it examined. Furthermore, an aborting cow, that has not been examined, is looked upon with disfavor by public as well as private bull-owners, so that much has been gained in this way in the last years."

(Abstractor's note. Considering topographical conditions and the methods of pasturing animals in the different districts mentioned, these reports show that spread of infection coincides quite well with the various degrees of communication between herds.)

H. J. S.

FIBROUS TUMOR AS SEQUELA OF STRANGLES (Abstractor's title).

Norges Offisielle Statistik, VII, 90. Veterinaervesenet og Kjöttkontrollen. Kristiania, 1921, p. 10.

A horse became affected with repeated attacks of colic and was killed as recovery was deemed unlikely. Postmortem examination showed a fibrous tumor of the mesentery compressing the intestines. Two years previously this horse had an attack of strangles which left him in very poor condition for several weeks, after which apparent recovery took place. The tumor was thought to be a result of an abscess of the mesentery, which evidently had ruptured into the peritoneal cavity, thus explaining the long continued illness following the attack of strangles.

H. J. S.

INFLAMMATION OF THE BRAIN FOLLOWING STRANGLES (Abstractor's title). Norges Offisielle Statistik, VII, 90. Veterinaervesenet og Kjöttkontrollen. Kristiania, 1921, p. 11.

A colt that had apparently recovered from strangles developed inflammation of the brain three or four weeks afterwards. Symptoms: "Sleeping sickness," moving by force only, finally manic fits, unconsciousness and paralysis. After about forty-eight hours the colt was killed. Postmortem examination revealed an abscess the size of a walnut in one of the hemispheres. This abscess contained pus like that found in strangles. Other alterations were: heavy congestion, excess of fluid in subdural space, thickening of meninges and adhesions between dura mater and cranium.

H. J. S.

SERUM TREATMENT FOR TETANUS (Abstractor's title). Norges Offisielle Statistik, VII, 90. Veterinaervesenet og Kjöttkontrollen, Kristiania, 1921, p. 13.

District Veterinarian J. Hordang reports as follows: "For many years I have used tetanus serum in small doses without having seen any practical action. Generally all affected animals died. I therefore began to use 500-1000 cc, injected intravenously, in one dose and the results were unusually favorably in that almost all the treated animals lived." He concludes that the earlier employed method of injecting repeated small doses is useless because the action of the serum comes too late.

H. J. S.

ARMY VETERINARY SERVICE

CHANGES RELATIVE TO VETERINARY OFFICERS

Regular Army

First Lieutenant Samuel G. Kielsmeier, Fort McPherson, Georgia, promoted to Captain, V. C., effective September 21, 1924.

First Lieutenant Joseph H. Dornblaser, Fort Huachuca, Arizona, promoted to Captain, V. C., effective September 16, 1924.

Lt. Colonel Walter R. Pick, V. C., relieved from duty as Attending Veterinarian, Washington, D. C., effective December 1, 1924, and on expiration of leave to sail from New York, City December 12, 1924, for Philippine Islands, reporting to the Commanding General, Philippine Department, for duty as assistant to Department Surgeon.

Veterinary Reserve Corps

Additional Reserve Corps Officers

Captains:

Billy Elza Carlisle, Camilla, Georgia.

Joseph M. Curry, 39 Hartland Street, Hartford, Conn.

Louis Earl Willey, 2103 Omaha Street, Sioux City, Iowa.

First Lieutenants:

Thomas Byron Carter, 1266 Rodney Avenue, Portland, Oregon.

Roy Frank Leslie, 127 City Hall, Cleveland, Ohio.

John Henry Schrader, Oxford, Iowa.

Charles Ross Niday, 805 Second Avenue, Gallipolis, Ohio.

2nd Lieutenants:

Alexander R. Anderson, Jr., 607 E. 7th Street, Hanford, Calif.

Laurence B. Duffy, 3802 S. 23rd Street, Omaha, Nebraska.

LeGrand J. Hargett, Trenton, Tenn.

Arthur D. Hubbell, 1554 Arrowhead Avenue, San Bernardino, Calif.

Charles Francis Layton, Republic, Kansas.

John Harvey Shoemaker, P. O. Box 1287, Great Falls, Montana.

Joseph J. Vara, 2230 Whitaker, Savannah, Georgia.

Separations from Reserve Corps

Major Fern L. McCollister, 122 Euclid Avenue, Willoughby, Ohio.

Failed to accept reappointment.

Captain George Henry Hewett, Kenwood Avenue, Delmar, New York.

Failed to accept reappointment.

First Lieutenant Robert E. Adams, Box 324, Smackover, Arkansas.

Transferred to Quartermaster—ORC.

First Lieutenant Richard M. Clark, Jr., Cornwall on Hudson, New York.

Failed to accept reappointment.

First Lieutenant Arthur F. Meredith, Lincoln Street, Lincoln, Kansas.

Failed to accept reappointment.

Second Lieutenant Laurence R. Bower, 65 Carroll Street, Binghamton, N. Y.

Accepted commission in Regular Army.

Second Lieutenant Ralph W. Hixson, Falls City, Nebraska.

Transferred to Infantry—ORC.

Second Lieutenant Walter E. Seymour, 2115 14th St., N. W., Washington, D. C.

Resigned, September 19, 1924.

Lt. Colonel Septimus Sisson, Ohio State University, Columbus, Ohio.

Died, July 24, 1924.

COMMUNICATIONS

CULTIVATION OF FOOT-AND-MOUTH DISEASE VIRUS NOT YET CONFIRMED

TO THE EDITOR:

A note in the *Schweizer Archiv fur Tierheilkunde* for Oct. 15, 1924, states that the work of Frosch and Dahman has not yet been confirmed. Professor Luhrs, a member of the commission appointed to report on their claim that the virus could be cultivated on agar and photographed, stated that so far both the cultures and animal inoculations have proved negative. Frosch and Dahman are reported to have replied that the report is premature and that Ruppert, of La Platta, has confirmed their work.

C. M. HARING.

Zurich, Switzerland, November 1, 1924.

RABIES IN WEST VIRGINIA

TO THE EDITOR:

Rabies has been very prevalent during the past year in West Virginia. Several counties were badly infected, and quite a number of cattle, hogs, horses, and dogs came down with the disease. Several persons were bitten and developed rabies and died. One man who was bitten did not develop the disease until the forty-first day, and another the thirty-eighth day. Dogs and cattle known to have been bitten did not develop symptoms till four months later, and one is known to have gone over eight months. We have given the single-dose prophylactic treatment with very good results, so far as known. Have quite a number still under observation. Have also given the Pasteur treatment to a number of dogs that were bitten, and the results have been very satisfactory so far.

I am very much afraid that the single-dose treatment, if not guarded very closely, will be very much abused, for the simple reason that so many people do not think their dogs have been exposed as much as they have. In any locality where rabies has been rather common, I do not advise the single dose, for the reason that I have had several calls for the single dose, and refused. A few days later the dog developed rabies, as said dog

had been bitten, unbeknown to the owner. So my advice to all veterinarians is to be very careful in advising the single dose in localities where rabies is prevalent, for you are liable to get in bad, and the public will lose confidence in the prophylactic treatment. I would like to see some legislation enforcing general quarantines and vaccination.

S. E. HERSHEY,

Consulting State Veterinarian.

Charleston, W. Va., Nov. 13, 1924.

FROM MICHIGAN, TOO

The following literary gem originated in Lansing, Mich., and found its way to the desk of Dr. C. H. Stange, Dean of the Division of Veterinary Medicine, at Iowa State College:

"Oct the 20 1924

"to the agakultur colage of iowa if you hav an EPedimick of Hog colry this fall Pleas let me now at once and you Will not Regret your troble"

Dean Stange duly sent it to Dr. Ward Giltner, Dean of the Division of Veterinary Science, at the Michigan Agricultural College. The latter promptly forwarded the epistle to Dr. B. J. Killham, State Veterinarian of Michigan, for his official attention. Dr. Killham forwarded it to the Editor with the following note:

"We are normally modest about our city, but believe the presence of this benefactor should be known."

Complying with Dr. Killham's implied request, we are giving publicity to the letter. Name and address of the writer will be furnished upon request.

AFFECTION AND FLIVVERS

A writer in the *Cape Argus*, published in Cape Town, in far-off Africa, comments as follows upon an address of Dr. Ward Giltner, in behalf of the horse:

"Professor Giltner, of the Michigan Agricultural College, says that the automobile has had its day. He further remarks that the time has gone when people will regard the motor conveyance as a subject for motor affection, and that this will now return to animals.

"I feel he is slightly mistaken on the question of affection. The public will never hold 'Black Bess' quite so close to their hearts as the flivver. The latter has so many more ailments and idiosyncrasies than a dumb beast that it just yearns for personal sympathy.

"I cannot imagine a horse-owner getting out of his dog-cart to tinker with the animal when it stalls. He cannot lift up the bonnet to delve inside and see what is wrong. He cannot study the interior, nor understand what makes the wheels go round. The horse would object.

"But look at the motor car. See how it responds to kind treatment or patiently undergoes cruelties. It will stand quietly while its owner fiddles with its insides, and later it will purr its gratefulness.

"In fact, Professor Giltner is wrong."

AMERICAN VETERINARY MEDICAL ASSOCIATION
Proceedings of Sixty-first Annual Meeting, Des Moines,
Iowa. August 19 to 22, 1924.

SECTION ON EDUCATION AND RESEARCH

WEDNESDAY MORNING, August 20, 1924

The meeting was called to order, at 9:30 a. m., by Dr. H. C. H. Kernkamp, chairman.

Dr. Kernkamp delivered his address.

GENTLEMEN:—

The ways in which most of the live stock diseases are dealt with is the result of research. Systematic scientific investigation has given us the knowledge of the form and structure of the animal body and has aided us to understand many of its functions and metabolic processes. Similar investigations have established the etiology, symptomatology, pathology and therapy for many of the plagues and sporadic ailments.

It is to be remembered that the phenomena which constitute our knowledge of the science of veterinary medicine were obscurities at one time in the past. Each year adds something to clarify the maze. However, there are still many factors to be brought from the imperspicuous to the perspicuous.

The progress and development of research sets forth new discoveries, new ideas and new theories and carries with it new methods, new equipment and new materials. Such achievements mean progress and enable one to be more exacting.

Most of the researches at the various institutions are done upon problems that can be produced under certain artificial conditions. In this way the problem is more or less under control and the results witnessed according to the special phases of the investigation. A majority of the investigations at such institutions center around problems that have a more or less widespread and general interest. They are the problems which have to do with the study of the destructive contagious and transmissible diseases. They are the most important problems and should be attacked in as vigorous a manner as the facilities and expenditure will permit.

There are other important problems that, from a professional and scientific standpoint, attract much interest. They are the technical problems in all branches of veterinary medicine, for example, in anatomy, physiology, pathology, bacteriology, immunology, diagnosis, medicine, surgery, etc. Much work has been done in these fields already but still more should be done. Still other problems, which we would refer to as obscure diseases or obscure conditions, offer an interesting field for research. It is to the latter that we wish to call especial attention.

It is difficult to state definitely just what should be included under obscure conditions or diseases. The more uncommon diseases or conditions or those which appear as "misfits" have a place under such heading. Our knowledge concerning neoplastic diseases, while they are not in a measure uncommon or obscure, is but little known in veterinary pathology. Much information needs be collected regarding the frequency of these diseases, the species, type and breed of live stock in which they most frequently occur, the clinical picture presented in animals affected with neoplasms and the amount of disability they cause. The exact location of the tumor, whether it is primary or secondary, its metastatic tendencies, the size of the new growth, the type of the growth, and the age of the animal affected are matters of highly scientific interest.

Anomalies have a distinct place in the category of obscure conditions. The observation, study and record of "freaks" have always been of much interest

to the veterinarian and have also attracted much general interest. There are many other conditions, of infectious and nutritional origin, which occur as obscurities.

To investigate and report upon an obscure condition does not imply that it must be a new discovery. The fact of the matter is that the investigation may reveal that what was thought to be a new disease when begun, was but a variation of some recognized condition. Such information is nevertheless of much value and should be recorded.

The material for studies of this kind is seldom available at an institution equipped to observe and study the condition from its onset to its termination. The fact is that these conditions usually occur at various and distant points or locations where such study could be made. However, in some cases the material can be transported to the institution or laboratory, either as a whole or in part. In other cases this is impossible. On the other hand, cases arise which do not need the aid of special equipment, while, in others, the lack of such assistance might result in the loss of valuable information. Therefore, in this connection we feel sure we can state the position of the institutions or laboratories when we say that they stand ready to assist in these problems according to their best ability.

It is in connection with problems of this kind that the practicing veterinarian or one engaged in control or inspection work can contribute much toward such investigations. The relation he bears to the various branches of animal industry places him in a position to be the first person technically trained to observe such conditions. The merits of the case then rest with his judgment.

The method of procedure when investigating cases of this kind requires special care. This is because of the fact that it is an uncommon condition and the fact that it may not occur a second time, at the hands of one individual, necessitates the collection of all available material and data. The value of the contribution is commensurate with the collection, discrimination and presentation of the facts.

A factor of as great importance as the observation and study of such conditions is the matter of its proper record. They should be published in the recognized journals, bulletins and pamphlets and made available for those interested. It is by the recording of the conditions which occur as obscurities today that we are in hopes of clarifying them tomorrow.

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SECRETARY PICKENS: Your secretary has no report, as such, but I would like to take this occasion to thank the members who have contributed to the program.

The following program was presented:

"Some Suggestions for Promoting and Financing Veterinary Education in America," by Dr. Ward Giltner.

"Further Progress in Veterinary Education," by Dr. V. A. Moore. (Extemporaneous address.)

"The Teaching of Veterinary Medicine to Agricultural Students," by Dr. J. F. Shigley.

"The Veterinarian in Extension Work," by Dr. Don McMahan.

ADJOURNMENT

THURSDAY EVENING, August 21, 1924

The meeting was called to order, at 8 p. m., by Dr. H. C. H. Kernkamp, chairman. The following program was presented:

"Recent Bureau of Animal Industry Experiment Station Bovine Infectious Abortion Studies," by Drs. E. C. Schroeder, and W. E. Cotton. (Read by Dr. Cotton.)

"Report on Experimental Work to Determine Whether Avian Tuberculosis is Transmitted Through the Eggs of Tuberculous Fowls," by Drs. C. P. Fitch, R. E. Lubbehusen and R. E. Dikmens. (Read by Dr. Fitch.)

"Our Present Knowledge of the Phenomena of Estrous in Domestic Animals; and the Factors Concerned in Their Production, with Their Relation to Sterility," (Fourth paper). By Drs. H. S. Murphey, G. W. McNutt, B. A. Zupp, W. A. Aitken. (Read by Dr. Murphey.)

"The Use of Living Suspensions of Streptococci in the Control of Bovine Mastitis," by Dr. C. M. Carpenter.

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CHAIRMAN KERKAMP: If there is no further discussion we are ready for the business session.

DR. GOSS: The chances are that we will go to the Pacific Coast for our next meeting. I would like to place in nomination for chairman of this Section the name of a man from the Pacific Coast, Dr. Fred M. Hayes.

The nomination was seconded. Dr. Birch moved that the nominations be closed. Motion seconded and carried. Dr. Hayes was then declared elected unanimously.

CHAIRMAN KERKAMP: We will now entertain nominations of the office of secretary.

DR. FITCH: I believe that, if there is anything that is necessary, it is that the work of the Secretary be continued. Most of us have little knowledge of the work carried on by the Secretary in the past. Therefore, I place before you the nomination of Dr. Pickens.

The nomination was seconded. Dr. Fitch moved to close the nominations. Motion seconded and carried. Dr. Pickens was declared elected secretary unanimously.

The meeting adjourned at 10:05 p. m.

ADJOURNMENT

SECTION ON GENERAL PRACTICE

WEDNESDAY MORNING, August 20, 1924

The meeting was called to order at 9:30 a.m., by Dr. Harry Caldwell, chairman. Dr. E. R. Steel, secretary of the Section on General Practice, read his report. (Applause)

Report of the Secretary

GENTLEMEN:—

In preparing the program for the Section on General Practice, I have co-operated with the Chairman relative to choice of material and subject matter. An effort has been made to secure papers of interest to the general practitioner and contributors have been requested to select titles and confine their discussions to conditions commonly met in practice, yet needing further study for their successful handling. If the program affords information and lends help to the ordinary man in practice in the solution of his usual problems, it is felt more worthwhile than to discuss unusual conditions or operations performed only by experts.

For this meeting especially, since the large percentage of the attendance consists of general practitioners, this idea has been thought particularly appropriate. We have made the program as diversified as possible, yet it deals with problems met in every-day practice. Insofar as practicable, practitioners have been secured to present papers or to discuss them; but our aim has been to have the subjects presented by men whose training and experience have been such as to qualify them especially for the handling of the topic, no matter what their work is in the profession.

In preparation of the clinic program, the officers of this section have co-operated with the veterinary faculty at the Iowa State College, and with Dr. H. E. Bemis in particular, for the staging of the clinic at Ames has been left in his charge. Rather than allow any one clinician to occupy a disproportionate part of the clinic time, exhibits and short demonstrations have been placed which should appeal to the practitioner and others in the profession alike. Your help in putting on the program is requested, by your prompt attendance, careful attention and free discussion of the topics presented.

(Signed) E. R. STEEL, *Secretary*.

On motion duly made, seconded and carried, the report was adopted.

The following program was presented:

"The Common Dissection of the Digestive and Reproductive Organs of the Fowl, with Comments on Digestive Processes and Diseases," by Dr. B. F. Kaupp. (Read by title.)

"Edema of the Wattles in Cockerels," by Dr. D. E. Davis.

"Common Disorders of the Digestive Tract of Small Animals," by Dr. W. J. Lentz. (Read by Dr. J. G. Hardenbergh.)

"The Handling of Some of the Serious Accidental Injuries Commonly Met with in Horse Practice," by Dr. R. R. Dykstra.

"Medicines Useful in Sheep Practice," by Dr. E. T. Baker. (Read by title.)

"The Auto-Intoxication of Advanced Pregnancy in Cattle," by Dr. Otto Menig. (Read by title.)

The meeting adjourned at 12:10 p. m.

ADJOURNMENT

THURSDAY EVENING, August 21, 1924

The meeting was called to order, at 7:45 p. m., by the chairman, Dr. Caldwell. The following program was presented:

"Experiments on Lowering the Cost of Vaccinating Against Hog Cholera: Immunizing Young Pigs. Using Mixed Serum and Virus. Artificial Hog Cholera Virus," by Dr. J. W. Benner.

"The Surgery of the Feet of Cattle," by Dr. T. H. Ferguson.

"Douching of the Recently Gravid Uterus Compared with Other Methods of Handling Retention of the After-birth in the Cow." by Dr. Herbert Lothe.

"The Origin and Significance of Some Pathological Processes of the Bovine Uterus," by Dr. E. T. Hallman.

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CHAIRMAN CALDWELL: This concludes the literary part of the program. Before we pass on to the election of officers I just want to say a few things regarding this program. I trust you have all enjoyed the program, and I believe you have. It seems to me to have been all that could have been desired. So far as credit for arranging this program, I want to tell you exactly who did it. Dr. Steel did it. I want to thank Dr. Steel personally for the part he has played in arranging this program. I wish to thank you all for your attendance and patience in this hot room tonight, and I wish also to thank every other member or person who presented a paper before this Section. I think this Section is going to be able to do a great deal of good for the practicing veterinarian if we can keep on with such programs as we have had at this session.

Next is the election of officers.

DR. QUITMAN: I rise to place in nomination for chairman of the Section on General Practice for the ensuing year a man who needs no introduction to you. Preliminary to nominating him, however, I wish to remind those who are here that the selection of officers, or at least the selection of chairman of this Section, and I believe the other sections, has been somewhat according to civil service rules, that is, promotion has been the order of the day. The man I am going to nominate, as I say, needs no introduction. He is a most indefatigable worker, consistently working for the benefit of the profession at large and for this Association and any other association and every other association he belongs to, and it has been said of him that he has a secretarial habit. Now you know when one becomes a victim of a pernicious habit, it is a good thing to switch him off and see if you can't break him of that habit. I, therefore, in order to break this man of the habit of being secretary of practically everything he

belongs to, think it a good plan to promote him to the chairmanship of this section. I place in nomination Dr. E. R. Steel.

The nomination was seconded by Dr. Treman. Dr. Ferguson then moved that nominations be closed and the unanimous ballot of the Section be cast for Dr. Steel. (Seconded and carried.) Dr. Caldwell cast the ballot.

CHAIRMAN CALDWELL: Now we are to have a secretary to succeed Dr. Steel.

DR. FERGUSON: Mr. President, I would like to nominate a man who has done a lot for the veterinary profession. He has been a regular attendant of meetings of this Association for a number of years. I don't see him in the room just now but I believe he will accept the secretaryship and he is a man whom we would be fortunate in electing. I, therefore, take pleasure in nominating Dr. L. A. Wright, of Columbus, Wisconsin, who has practiced there for thirty years.

The nomination was seconded by Dr. Quitman. Dr. Quitman then moved that the nomination be closed and the unanimous ballot of the Section be cast for Dr. Wright. (Seconded and carried.) Dr. Caldwell cast the ballot.

DR. QUITMAN: I move we adjourn.

The motion was seconded and carried and the meeting adjourned at 11:10 p. m.

ADJOURNMENT

SECTION ON SANITARY SCIENCE AND POLICE

WEDNESDAY MORNING, August 20, 1924

The meeting was called to order, at 9:25 a. m., by Dr. Orlan Hall, chairman.

Dr. Hall delivered his address.

GENTLEMEN:—

In order to systematize the scientific work of this Association, there have been formed sections, each of which shall be devoted to one of the recognized branches into which the science and art of veterinary medicine are, for convenience, divided.

This Section is set aside for the purpose of discussing those diseases of live stock which call for federal or state control, or both, and in which veterinarians, as a whole, should be interested. Therefore, we assemble annually for the purpose of discussing and recording the progress which has been made from year to year.

You will note that an endeavor has been made, in preparing this program, to provide a sufficient range of subjects to touch briefly, at least, the principal phases of sanitary science and police. In addition, however, papers will be presented before this Section, at this meeting, dealing with the subject of milk and dairy inspection, a subject which is of very great importance and which is receiving a great deal of attention from the veterinary profession, but should receive a great deal more attention in the future than it has in the past.

I am sure you will agree with me that the veterinarians who took part in the recent outbreak of foot-and-mouth disease in California, both federal and state, as well as private, have established an excellent standard of efficiency in controlling what appeared to be one of the most serious outbreaks that has invaded the North American Continent. It would appear from recent information and from this distance, that the task has been well done.

Progress of a magnitude which would have appeared impossible a few years ago has been made in endeavoring to eradicate bovine tuberculosis. The stock owners appreciate the work that is being done and are apparently confident of the ultimate eradication of the disease. Let us endeavor to maintain that confidence and carry on more vigorously than ever, not losing sight of the fact that valuable research work still remains to be done.

Contagious abortion in our live stock, more especially our cattle herds, continues to exact heavy toll annually. Research workers and veterinarians in general, however, are apparently becoming more efficient in dealing with this disease and its sequelae.

The control of Texas fever, and in Canada, the almost complete eradication of hog cholera, and the complete eradication of dourine, demonstrates what can be done through the application of sanitary science and police measures.

* * * * *

Dr. J. H. McNeil then presented his report as secretary of the Section.

Report of the Secretary

GENTLEMEN:—

In the preparation of the program, working in co-operation with the chairman of the Section and the Secretary-Editor, it has been our endeavor to present subjects that are of vital importance and of interest to all engaged in sanitary control work.

It was our purpose to secure a paper from our California friends, Drs. Hart and Traum, dealing especially with foot-and-mouth disease, but they have been so busily engaged in the eradication of this recent outbreak that it was impossible for them to present a paper and they expressed a feeling that it was quite doubtful if California would send a representative to this meeting. We conferred with Dr. M. P. Ravenel, of Columbia, Missouri, but he found it impossible to be with us and discuss the important subject of the relationship existing between bovine and human tuberculosis.

We regret exceedingly that a number of the authors will not be present to present papers in person. However, arrangements will be made to present them in full or have them read by title and print them in the proceedings of the meeting. By referring to the printed program, which you all have, you will find the titles of all papers and the authors' names.

At this time, I wish to extend my personal thanks to those who have contributed to the program and assisted in its preparation.

(Signed) J. H. McNEIL, *Secretary*.

The following program was presented:

"The Whys of Tuberculin Test Failures," by Dr. George E. Corwin. (Read by Dr. J. H. McNeil.)

"The Disinfection of Premises in Connection with the Eradication of Tuberculosis," by Dr. J. A. Barger.

"Notes on Postmortem Methods in Cattle Reacting to Tuberculin," by Dr. F. H. S. Lowrey.

"The Essentials of Modern Milk Control," by Dr. George W. Grim. (Read by Dr. J. H. McNeil.)

"An Outbreak of Goose Septicemia with Notes on the Commercial Fattening of Geese," by Dr. F. R. Beaudette. (Read by title.)

ADJOURNMENT

THURSDAY EVENING, August 21, 1924.

The meeting was called to order, at 7:40 p. m., by Dr. Orlan Hall, chairman. The following program was presented:

"The Present Status of Rabies in the United States," by Dr. A. Eichhorn.

"Bovine Infectious Abortion, Prevention and Control," by Dr. M. F. Barnes.

"Animal Disease Control," by Dr. R. C. Julien.

"Who Shall Vaccinate My Hogs?" by Dr. I. K. Atherton.

"An Outbreak of Paratyphoid Dysentery in Lambs," by Drs. I. E. Newsom and Floyd Cross (Read by Dr. Newsom.)

"Immunization Against Hemorrhagic Septicemia," by Drs. John S. Buckley and Wm. S. Gochenour. (Read by Dr. W. E. Cotton.)

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CHAIRMAN HALL: If there is no further discussion we will proceed with the election of officers for the ensuing year. Nominations are in order for chairman.

Dr. Kiernan nominated Dr. Hall to succeed himself. Nomination seconded by Dr. Gibson. Motion duly made, seconded and carried, to make the election of Dr. Hall unanimous. Dr. McNeil cast the ballot.

CHAIRMAN HALL: Gentlemen, all that I can say is that I will certainly work as hard as I can for the benefit of this Association as well as for this Section, and I trust that my services may be of more value next year than they have been this year. I thank you.

The next order of business is the election of a secretary.

Dr. Hargrave nominated Dr. J. H. McNeil. Nomination seconded by Dr. Gibson, who moved that the unanimous ballot of the Section be cast for Dr. McNeil as secretary. Duly seconded and carried. Dr. Hall cast the ballot.

ADJOURNMENT

ASSOCIATION MEETINGS

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY

The regular monthly meeting of the Veterinary Medical Association of New York City was called to order by the president, Dr. J. Elliott Crawford, in the Academy of Medicine, 17 W. 43rd St., New York City, on Wednesday evening, June 4, 1924, at 8:30 p. m.

The minutes of the May meeting were read and approved. The entire evening was spent on case reports.

Dr. O. E. McKim showed photographs of broken limbs with casts composed of bandages supported by sodium silicate. By fastening a caster to the bottom, the animals were able to use the legs freely. The use of sodium silicate and plaster of Paris brought out a spirited discussion. The various members gave their opinions as to just what method was the best for the care of fractures.

Dr. C. G. Rohrer reported a large number of fractures treated by using a moderately tight bandage, supported by light splints, for long bones, these splints varying according to the size of the dog. He recommended veneering as a very pliable and soft material for small animals. The larger animals must have a heavier splint. He never uses sodium silicate or plaster, objecting to the hardness and heaviness of these materials; also the inability to remove such bandages. In fractures of the pelvis he bandages the parts by the figure-eight method and not too tightly. In all cases allow some motion and friction to insure good results.

Dr. Crawford advised no pressure in treating fractures, light bandages and splints for long bones, and no splints for fractures of the pelvis. Absolute rest and quiet are essential in all these cases. Dr. H. Kock reported the use of a box, to keep the animal quiet, with good results.

Dr. W. Reid Blair would allow some motion and friction to procure good results in fractures. He reported an injury to the spine in a leopard. This animal was kept in a cage for four months, and for four weeks was completely paralyzed posteriorly but made a complete recovery in one year.

Dr. C. W. Shaw reported an injury by an automobile to an English bull dog causing considerable hemorrhage from the nose, total blindness and carriage of the head to one side. This animal recovered his sight and carried the head normally after a time.

Dr. Chas. S. Chase reported a number of fractures treated and splints made from peach baskets used with good results. Dr. Bruce Blair advised light bandages in some case and none at all in other cases, with good results.

Dr. Geo. H. Berns, while observing fifteen or twenty horses at one time with osteoporosis, gave an unfavorable prognosis. These horses, when sold, in many cases recovered. In a number of horses affected with a shifting lameness, under his care, in about three months developed osteoporosis.

Dr. W. Reid Blair reported destroying a Celtic pony with strychnin. On autopsy he found the entire pelvis in pieces the size of a half-dollar, with one or two cervical vertebrae broken. This case of osteoporosis showed no enlargement of bone but rather a shrinkage. Dr. Chase, on autopsy of a Shetland pony, destroyed for osteoporosis, found the joints and vertebrae badly affected but head and jaw normal.

Drs. Wm. J. McKinney, Robt. S. MacKellar, Ray W. Gannett and others reported cases of osteoporosis. Dr. H. Kock reported a number of cases of purpura successfully treated recently. Dr. MacKellar reported the removal of a large stone with a nucleus, from the rectum of a horse.

Dr. Leon Roth was elected to membership in the Association.

It was regularly moved and seconded that the treasurer send a check for \$50 to the New York State Veterinary Society.

President Crawford appointed the following delegates; to the A. V. M. A. meeting, at Des Moines: Drs. Bruce Blair, Cassius Way, and W. Reid Blair. To the Eastern Tuberculosis Conference and New York State Society meeting, at Albany: Drs. R. W. Gannett, C. S. Chase and W. Reid Blair.

Dr. Gannett reported the amendment to the Veterinary Practice Act having been finally passed by the legislature and signed by the Governor.

No further business appearing, the meeting adjourned.

C. G. ROHRER, *Secretary.*

EASTERN IOWA VETERINARY ASSOCIATION

Over one hundred veterinarians attended the annual meeting of the Eastern Iowa Veterinary Association, at Cedar Rapids, Iowa, Oct. 1-2, 1924.

Prominent veterinarians on the program included: Drs. A. T. Kinsley, of Kansas City, Mo.; Peter Malcolm and J. A. Barger, of Des Moines, Iowa. Six new members were admitted and Cedar Rapids chosen for the 1925 convention city.

Officers for the ensuing year were elected as follows: Dr. J. C. McCabe, West Liberty, president; Dr. John B. Bryant, Mount Vernon, vice-president; Dr. F. J. Crow, Iowa City, secretary-treasurer; Dr. Jerry Wolfe, Grand Mound, and J. C. Glenn, Norway, members of the Executive Board.

The meeting concluded with a banquet and dance, attended by the veterinarians and their wives. Dr. J. S. Koen, of Bloomington, Ill., was master of ceremonies.

MAHONING VALLEY VETERINARY CLUB

A meeting of the Mahoning Valley Veterinary Club was held at Punxsutawney, Pa., October 7, 1924. Dr. M. D. Rentschler, practitioner of the town, presided. The members present were: Drs. Marshall and Connolly, of Indiana; McCurdy, of Creekside; Underwood, of Clearfield; Rentschler, of Punxsutawney; Church, of Harrisburg; and Christy, of Brookville.

Dr. William J. Lentz, Director of the Small Animal Clinic of the University of Pennsylvania, was the speaker. He delivered an excellent address on "Diseases of Small Animals," especially on the so-called "fright disease," helminthiasis and distemper in dogs. He stated that fright disease is not a specific entity but an ailment which has been known for a long time. He attributes its etiology to brain inanition, excitement, indigestion, intestinal glandular inactivity, liver torpidity, distemper and influenza meningitis.

For the treatment of fright disease Dr. Lentz advocates the administration of barbital, 10 grains; or luminal sodium, 1-7 grains, which could be given hypodermically; luminal; or calomel, $\frac{1}{2}$ grain every half-hour until $1\frac{1}{2}$ grs. are given. He is of the opinion that morphin is contra-indicated. Improvement in feeding is also recommended. As to worm treatment Dr. Lentz laid great emphasis on the preparation of the animal before the anthelmintic is given. He advocates that the day before the

treatment the animal should receive no food, after a light breakfast of milk, and at night should receive two teaspoonsful of castor oil. Next morning, on an empty stomach, the anthelmintic is given. Four hours later, the first meal should be warm milk. For several feedings, at three-hour intervals, the diet should be a liquid one.

As for the treatment of distemper he believes that daily rectal injections of normal saline solution are very beneficial. He recommends sodium bicarbonate, 5-10 grs., t.i.d.; guaiacol, two drops, and five grains of bismuth in capsule, or guaiacol carbonate, 5-10 grs., every four hours.

C. M. CHRISTY, *Secretary.*

MAINE VETERINARY MEDICAL ASSOCIATION

The Maine Veterinary Medical Association met for a clinic at Dr. W. H. Corey's well-equipped hospital, at Newport, Maine, October 8, 1924, at 3:00 p. m. Two interesting cases of fistulous withers were operated on by Dr. A. J. Neal, of Bangor, assisted by Dr. W. H. Corey. A spaying operation was done by Dr. P. R. Baird, of Waterville, assisted by Dr. Corey. An interesting case of a reclaimed, bad-acting race horse was shown by Dr. Corey. Kindness was the principal treatment that cured the animal of his bad habits and made him into a valuable race animal.

The evening business session was called to order at 7:30 p. m., in Dr. Corey's large parlor, by the vice-president, Dr. C. L. Ryan, in the absence of the president, Dr. E. E. Russell.

Dr. Ryan read an interesting paper on "Canine Distemper," and nearly all present took an active part in the discussion which followed. Dr. M. E. Maddocks, of Augusta, related an experience where several dogs were presented for treatment within ten days, all suffering from similar symptoms of fear. H-M-C and laxatives were used in these cases with partial success.

Contagious abortion was ably discussed by Drs. M. E. Maddocks, C. F. Davis, P. R. Baird, L. E. Maddocks, and R. E. Libby. Vaccination was spoken of very highly. Dr. R. B. Stanhope gave an interesting account of his treatment of stomatitis in dogs. Astringents prove successful, he stated.

Drs. P. R. Baird, C. F. Dwinal, W. H. Corey, and I. L. Salley, of Skowhegan, discussed azoturia from all angles and much interest was manifest in this subject. The treatment for mastitis

was ably discussed by Drs. M. E. Maddocks, P. R. Baird, C. L. Ryan, C. F. Davis and E. E. Russell.

Hon. H. M. Tucker, Chief of the Division of Animal Industry, was present and gave an interesting talk on "Intradermal Tuberculin Testing Regulations." Dr. A. J. Neal spoke of his method of spaying without stitches, which has proved very successful. Drs. Maddocks and Baird spoke very favorably of the bacterin treatment in veterinary practice.

A rising vote of thanks was extended to Dr. W. H. Corey for his hospitality.

The next meeting was voted to be held at Waterville, Maine, the second week in January, and meeting adjourned.

J. B. REIDY, *Resident Secretary for Maine.*

WABASH VALLEY (IND.) VETERINARY ASSOCIATION

The Wabash Valley Veterinary Association held an interesting meeting at Wabash, Ind., Oct. 8, 1924. More than thirty veterinarians were present from Wabash, Howard, Cass, Carroll, Grant, Fulton and Miami Countries.

Dr. J. E. Gibson, of Indianapolis, in charge of tuberculosis eradication work in Indiana for the B. A. I. and Dr. R. C. Julien, state veterinarian, were the principal speakers.

The officers of the Association are: Dr. G. M. Wagaman, Kokomo, president; Dr. E. C. Rayl, Kokomo, secretary. The December meeting will be held at Peru.

HAWAII VETERINARY MEDICAL ASSOCIATION

The first annual meeting of the Hawaii Veterinary Medical Association was held in Honolulu, October 20, 1924, at 1:30 p. m., at the Tourist Bureau rooms. Of the seventeen veterinarians in the Islands, and four of them connected with the Army, ten were present.

A constitution and by-laws was adopted and a general business meeting was held in the afternoon, including the election of officers for the ensuing year which resulted as follows: Dr. W. T. Monsarrat, Honolulu, president; Dr. H. B. Elliot, Hilo, vice-president; and Dr. P. H. Browning, Honolulu, secretary-treasurer.

Papers read included the president's address, dwelling on the early history of the veterinary profession in the Islands, down to

the present time, and a splendid paper on contagious abortion by Dr. Cyril Golding, of Kauai.

A radiogram of more than passing importance was received from Senator Harold Rice, one of the largest live stock breeders on the Islands, which read as follows:

"Kindly extend my congratulations to Hawaii Veterinary Medical Association upon its organization, also my pledge of assistance in furthering all constructive legislation recommended."

The meeting adjourned to meet at 6:30 p. m., at the Hotel Pleasanton, where the members enjoyed a good dinner and two hours of case reports.

By a unanimous vote, it was the best, the largest and first veterinary medical association meeting ever held in the Hawaiian Islands and that the next one would be bigger and better.

P. H. BROWNING, *Secretary-Treasurer*.

STATE VETERINARY MEDICAL ASSOCIATION OF LOUISIANA

The first semi-annual meeting of the State Veterinary Medical Association of Louisiana was held in the Alumni Building of the State University, at Baton Rouge, October 22-23, 1924. Forty-two veterinarians from Louisiana and other states were in attendance.

A number of very interesting papers were presented, among which the following may be mentioned:

"Tuberculosis," by Dr. A. F. Staub, Inspector-in-Charge, Bureau of Animal Industry, New Orleans, La.

"Rabies," by Dr. Adolph Eichhorn, Lederle Antitoxin Laboratories, Pearl River, N. Y.

"Anthrax Aggressin," by Dr. C. E. Salsbery, Jensen-Salsbery Laboratories, Kansas City, Mo.

"Anthelmintic Medication of Dogs," by Dr. N. F. Williams, Ft. Worth, Texas.

A paper, prepared by Dr. Oscar Dowling, president of the Louisiana State Board of Health, entitled "The Relation of Rabies to the Medical Profession," was read by Dr. Scott, of New Orleans.

On the second day of the meeting, a splendid clinic was held, under the direction of Dr. P. J. Orchard, of Baton Rouge. Dr. D. A. Maclean, of New Orleans, performed a roaring operation.

Dr. L. H. Bennett, of Monroe, spayed a bitch. Dr. E. P. Flower, of Baton Rouge, demonstrated the administration of anthelmintics to swine by means of the stomach-tube. He also demonstrated methods of preparing specimens for examination for parasites. Dr. A. F. Staub demonstrated lesions of tuberculosis in reacting cattle. Dr. F. J. Douglass, of New Orleans, operated on a fistula of the withers.

Everyone seemed to enjoy the meeting, and before adjournment it was decided to hold the next meeting in Alexandria, in the spring of 1925.

L. H. BENNETT, *Secretary*.

INTER-STATE VETERINARY ASSOCIATION

Eighty veterinarians from South Dakota, Nebraska, Iowa, and Minnesota attended the Fall meeting of the Inter-State Veterinary Association, at Sioux City, Iowa, October 28, 1924. Dr. W. A. Cornell, Emerson, Nebraska, presided.

Dr. C. H. Covault, Ames, Iowa, discussed small animal practice in a manner that was both interesting and instructive, even to those veterinarians whose practice with small animals is very limited.

Dr. C. E. Juhl, Osage, Iowa, took the subject, "Vermifuges and Their Administration to Swine." According to Dr. Juhl, good technic in the administration of vermifuges to swine is much more difficult to acquire than the administration of hog cholera serum. Many instances were cited where the improper use of vermifuges had caused considerable loss.

Dr. E. L. Eggleston, Alcester, S. D., and Dr. B. B. Binnal, Pierson, Iowa, gave very interesting case reports. Sioux Falls, S. D., was represented by Dr. Fred Evans, who gave "Some Short Talks on Important Subjects." He called attention to a knowledge of breeds as a great asset in general practice, and that veterinarians owe it to their clients to give them advice on the herd bull and the male hog. Support of the tuberculosis eradication movement was strongly urged by Dr. Evans.

Dr. E. R. Steel's subject dealt with "Problems Confronting the Veterinary Profession in Iowa and Attempts Being Made to Solve Them." As secretary of the Iowa State Veterinary Association, he was in a position to give the Inter-State Association some valuable information, and he did. From his discussion of attempts being made to check violations of the

State's Veterinary Practice Act, it was quite evident that Dr. Steel is a busy and efficient secretary.

Dr. P. Malcolm, State Veterinarian of Iowa, gave the "inside" of veterinary practice in Iowa, and what is being done at the State House for our interests. Dr. C. H. Covault conducted a small animal clinic, and Dr. Juhl demonstrated his method of administering vermifuges to swine by use of the stomach-tube; also a director he uses for passing the stomach-tube in cattle. The clinic was held at Dr. G. P. Statter's hospital.

Dr. W. A. Cornell, Emerson, Nebr., was elected president; Dr. W. F. Miller, Storm Lake, Iowa, vice-president; and Dr. P. L. Ellis, Merrill, Iowa, was re-elected secretary and treasurer.

Forty ladies attending the meeting organized an auxiliary association, and Mrs. Bornschein, of Merville, Iowa, was elected chairman.

A delightful banquet and dance at the West Hotel was enjoyed by the Association and ladies, through the courtesy of the Sioux Falls Serum Company, Purity Serum Company, and the Sioux City Serum Company.

P. L. ELLIS, *Secretary*.

NATIONAL ASSOCIATION OF BUREAU OF ANIMAL INDUSTRY VETERINARIANS—MISSISSIPPI VALLEY DIVISION

The regular meeting of the National Association of Bureau of Animal Industry Veterinarians—Mississippi Valley Division was held at St. Louis, Mo., in the Federal Building, Saturday evening, Nov. 1, 1924. President L. C. Stewart called the meeting to order. The minutes of the previous meeting were read and accepted.

Dr. R. E. Surring read a paper on "Hog Cholera," which was followed by a discussion by Drs. S. L. Blount, L. C. Stewart, F. S. Thurman, R. E. Surring, H. J. Timmerman, and J. S. Jenison.

Various other communications were read and ordered filed.

The next meeting will be held in East St. Louis, Ill., Feb. 14, 1925 at the Federal Building.

G. H. BRUNS, *Secretary-Treasurer*.

SOUTHWESTERN MICHIGAN VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Southwestern Michigan Veterinary Medical Association was held in the Chamber of Commerce Building, Kalamazoo, Mich., November 13, 1924.

Dr. A. Kotlan, parasitologist, Royal Veterinary College, Budapest, Hungary, gave a very interesting discussion on veterinary conditions in Hungary. Considering that Dr. Kotlan has been in this country only four months, his command of English seems very remarkable.

Dr. Ward Giltner, Dean of the Division of Veterinary Science, Michigan Agricultural College, talked on veterinary education, with special reference to short courses at the college, for veterinary practitioners. These courses should be of great value to the live stock interests of the state by bringing to the veterinary practitioner the latest discoveries in the profession.

Dr. H. M. Newton, Inspector-in-Charge, Hog Cholera Eradication, U. S. B. A. I., gave a very interesting discussion of his experiences in assisting in the eradication of the recent outbreak of foot-and-mouth disease in California.

Dr. H. J. Stafseth, specialist in poultry diseases, Michigan Agricultural College, gave a valuable discourse regarding the recent discovery in the treatment of blackhead in turkeys, and also as to his findings in leg weakness of chickens, which has been so prevalent during the past year in the large commercial egg-producing flocks of the state.

Dinner was served at the Columbia Hotel, after which a very enjoyable social evening was spent. Dr. B. J. Killham presided as toastmaster. About thirty members were present at this meeting.

The following officers were elected for the coming year: Dr. H. J. Schaefer, Bangor, President; Dr. O. G. Davidson, Kalamazoo, Vice-President; Dr. Geo. McCollister, Kalamazoo, Secretary-Treasurer.

GEORGE MCCOLLISTER, *Secretary.*

WHY IT'S DUMB

A youngster's composition on the giraffe ran: "The giraffe is a dumb animal and cannot express itself by any sound, because its neck is so long that its voice gets tired on its way to its mouth."—*Boston Transcript.*

COMMENCEMENT

ONTARIO VETERINARY COLLEGE

The annual Commencement Exercises and Presentation of Prizes was held in the Assembly Hall of the Ontario Veterinary College, November 5, 1924. A large gathering was present, including representatives from the Ontario Agricultural College, the Mayor and Council of Guelph, Chamber of Commerce, Board of Education, and other bodies. W. B. Roadhouse, Deputy Minister of Agriculture, and Sir Robert A. Falconer, President of the University of Toronto, also attended and delivered excellent addresses. Principal C. D. McGilvray acted as Chairman and, in his introductory remarks, alluded to the great advancement which is becoming more noticeable in the application of veterinary science through the better trained graduate.

It was also a matter of gratification that the attendance was again increasing, auguring well for the future and indicating that general conditions were becoming more stabilized. In announcing the winners of the various prizes, Principal McGilvray drew attention to the cosmopolitan student body of the Ontario Veterinary College, mentioning the fact that there were present as students attending the College, young men from all of the different provinces of Canada, as well as from Great Britain and the United States. The Principal also expressed appreciation of the support rendered the College by the Department of Agriculture, under which it functions, as well as by the University of Toronto, which directs its educational policy and grants degrees in veterinary science to its graduates.

Mr. W. B. Roadhouse, Deputy Minister of Agriculture, expressed himself as being pleased with the continued progress manifested by the College, and congratulated the student body on its high standard, as evidenced by the prizes being awarded to the successful candidates. The Department of Agriculture, through the Minister, had always taken a keen interest in promoting the welfare of the College, as by so doing it was felt that a distinct service was being rendered to agriculture, both in the Province of Ontario and throughout the entire Dominion.

Sir Robert Falconer, President of the University of Toronto, on rising to make his address, was extended a warm reception by the audience, who no doubt had still fresh in mind the splen-

did address which he delivered at a similar function last year. President Falconer was in excellent form, and in the course of his address, touched a responsive chord in those present. He seemed to have the right thought and the right word, and, in alluding to the progress which we were making, he thought that we had much to be thankful for and little to regret, as we had a great heritage. In this regard he cited the fact that the mineral wealth of Ontario was now reaching gigantic proportions each year, which, together with its agricultural resources, its forests, fisheries, and industries, were a sure indication of permanency and a prosperous country.

Having this material advantage, it was our duty to use them to the best possible purpose, and by means of education and the application of science, a larger measure of usefulness would result through these different channels. In addressing the student body in particular, he recommended that they maintain a high standard of citizenship and to value properly the education which they were receiving and the opportunities offered through their education and training in the veterinary college, which was one of the colleges affiliated with the University. President Falconer inclined to the view that today our standards of education were being satisfactorily maintained, and that the young men and women were now able to go forward to their life work even better equipped than before. In concluding, he appealed to those present to consider the problems of life as deserving of the closest attention in order that the best solution of our various problems might be arrived at. President Falconer then presented the prizes to the successful candidates, as follows:

FIRST YEAR CLASS

General Proficiency:

First Prize.....	R. V. Westerberg, Simsbury, Conn.
Second Prize.....	S. P. Giebelhaus, Stony Plain, Alta.
Third Prize.....	J. C. Bankier, Glasgow, Scotland

Anatomy:

Special Prize awarded by Dr. H. D. Nelson.....	R. V. Westerberg, Simsbury, Conn.
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Histology:

Special Prize awarded by Dr. H. E. Batt.....	R. V. Westerberg, Simsbury, Conn.
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Canadian Army Veterinary Corps Prize:

Awarded to.....	F. M. Wheatley, Fort Qu'Appelle, Sask.
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SECOND YEAR CLASS

General Proficiency:

First Prize.....	L. F. Barthelme, Labette, Kansas
Second Prize.....	F. J. Cote, Guelph, Ont.
Third Prize.....	J. Gillies, Cedarville, Ont.

Anatomy:

Special Prize awarded by Dr. H. D. Nelson F. J. Cote, Guelph, Ont.

Histology:

Special Prize awarded by Dr. H. E. Batt H. S. Smith, McKeesport, Penn.

Canadian Army Veterinary Corps Prize:

Awarded to G. M. Hamilton, Portage La Prairie, Man.

THIRD YEAR CLASS

General Proficiency:

First Prize G. A. Edge, Hull, England

Second Prize P. J. Kelly, Osgoode, Ont.

Third Prize W. J. Rumney, Victoria Harbour, Ont.

Canine Diseases:

Special Prize awarded by Dr. J. G. Harvey P. Priestley, Kerrobert, Sask.

Canadian Army Veterinarian Corps Prize:

Awarded to P. Priestley, Kerrobert, Sask.

Sporadic Diseases and Dentistry:

Special Prize awarded by Dr. J. N. Pringle R. P. Swartz, Los Angeles, Cal.

SPLENDID TRIBUTE TO DR. LAW

In the *Cornellian Council Bulletin* for October appeared an article entitled, "The Builders of Cornell." This article was the first of a series of sketches of a few of the pioneers in education who have left their impress indelibly stamped on Cornell University. The article states: "What Cornell is today she owes in large measure to these and other men of their type."

It is very pleasing to note that among the first six of these men to whom tribute is paid is Dr. James Law. The following brief sketch of Dr. Law has been copied from the article.



DR. JAMES LAW

Dr. Law, Professor of Comparative Medicine for 40 years, put to the service of the University, the State and the Nation, his high ability, his training in the best schools of Great Britain and France, and his experience in dealing with the animal diseases and plagues that in the sixties were devastating Europe.

He created a department of veterinary medicine, and made the university community and the state appreciate the vital relations of animal to human diseases and to the food supply.

Due largely to his efforts the present Veterinary College was established, and the present day veterinarian is an educated man, and member of an honored profession.

MISCELLANEOUS

NEW PLANT FOR PITMAN-MOORE

The Pitman-Moore Company has moved into a new pharmaceutical plant located at Madison Avenue, Morris and Delaware Streets, Indianapolis, the third plant to be occupied by the Company in a period of twenty-five years in business. The large plant recently vacated was found entirely inadequate for the needs of the business. In addition to the new Indianapolis plant the firm also owns extensive laboratories near Zionsville, Indiana, where the biological products are developed and manufactured.



Pitman-Moore Company's New Home

The new plant is of heavy, mill-type construction, red brick faced with limestone trimming. It is said to be one of the most completely equipped and conveniently arranged pharmaceutical laboratories in existence. Every facility known to pharmaceutical science for furthering the accuracy of each delicate operation required in the compounding of medicinal preparations has been incorporated in its structure, according to a recent announcement.

"BULL DOG" SNYDER COMMENDED

Department officials supervising the eradication of foot-and-mouth disease in California have commended Dr. Rudolph Snyder for leadership, tenacity, fearlessness, optimism, and professional skill in handling the field situation. "Bull Dog" Snyder, as he is commonly known by his associates, was inspector in charge of Bureau of Animal Industry field-inspection work in California at the time that the cattle plague appeared last winter. It was he who first reported the disease to the Washington office. Throughout the outbreak he has been on the "firing line," generally on the sector where the situation was most serious.

One of the most serious problems in suppressing foot-and-mouth disease occurred in Tuolumne County, where the disease appeared suddenly among range cattle in the mountains. That portion of the country was so rough and so filled with canyons that the task of rounding up the diseased and exposed cattle and burying them seemed almost hopeless to cattlemen and some of the inspectors. This sentiment prevailed when Doctor Snyder reached the locality. In a dramatic interview with the men, he commanded any who doubted the ability of the veterinary force to suppress the disease in the county to step forward, declaring that he would send them to an easier assignment for which they would be more fitted. All remained. Having strengthened the morale of the force, he immediately began rounding up and inspecting all susceptible live stock, with the result that in less than two weeks every known diseased animal was found and buried. Recurrences have been promptly suppressed.

In all the six outbreaks of foot-and-mouth disease which have occurred in the United States probably no single undertaking offered more difficulty than the task of preparing suitable burial trenches for the condemned animals in Tuolumne County, Calif. The rough and rocky land made the use of trenching machinery out of the question. The plan of saturating the carcasses with oil and burning them was considered, but was rejected by "Bull Dog" Snyder as too slow, owing to the distance and the nature of the roads over which oil would have to be transported. He solved the problem by driving the first herd of infected cattle—700 in number—into a deep, blind canyon, shooting them as usual, and then dynamiting the sides of the canyon, thereby covering the carcasses even more deeply than usual. The same

method has been used on subsequent occasions with equally satisfactory results.

Doctor Snyder's fearlessness has won the admiration of his associates. On one occasion recently, he found it necessary to disinfect a cowboy who had been on premises infected with foot-and-mouth disease. The cowboy was of the husky, wiry, blustering, buckaroo type, and the vocabulary with which he expressed his opinion of Government inspectors and scientific methods bordered on 100 per cent profanity. The incident occurred in an isolated mountain pass, and several of the cowboy's friends were present. In spite of the odds against him, Doctor Snyder not only compelled a thorough disinfection and silenced the profanity, but warned the cowboy to keep away from cattle and sheep ranches for 30 days as an additional disease-control safeguard. Threatening to trail him across the continent if he disobeyed orders Doctor Snyder obtained the cowboy's promise, before witnesses, to follow the instructions given.

Being reluctant to discuss his experiences, Doctor Snyder's name has seldom appeared in print during the outbreak of foot-and-mouth disease, in which he has played such an active part. The incidents described came to the personal attention of Dr. John R. Mohler, Chief of the Bureau of Animal Industry, on his recent visit to California, where he made first-hand observations of the foot-and-mouth situation.—(*The Official Record*, U. S. Dept. of Agri.)

A DISEASE CONQUERED

California has won a notable victory over the foot-and-mouth disease, which recently was sweeping that state, causing huge loss to farmers and threatening neighboring states. In the last two months the disease has been under control, and there have been no new cases reported since early in October.

This is the direct result of heroic efforts. The public authorities of California, aided by federal authorities, spared no pains, money or personal feelings in their ruthless attack on a devastating animal disease. Many citizens of California and other states were discommoded, and subjected to loss, while the quarantine was in force and infected herds were being destroyed. But it is realized everywhere that this was the only wise procedure, and the losses will be compensated by future gains.

If the same drastic effort could be put forth in behalf of human beings, throughout the country, various diseases which are still devastating human life, despite all our progress in scientific knowledge, might be stamped out.—

Dixon (Ill.) Telegraph.

COLLEGE NOTES

Dr. D. W. Ashcraft (O. S. U. '23), who has been associated in practice with Dr. W. A. Brown, of Columbus, Ohio, accepted the position of Instructor in Anatomy, in the College of Veterinary Medicine, Ohio State University, on November 1, 1924.

Dean Giltner reports that among the veterinary students enrolled at the Michigan Agricultural College, this year, are a British subject, one from the Barbados, a Chinese from Nanking, and representatives from practically every section of the United States.

Among the freshmen veterinary students enrolled at the Ontario Veterinary College are Mr. and Mrs. Charles F. Sprake, of Detroit, Michigan. Mrs. Sprake is the daughter of Dr. H. T. Carpenter, of Detroit, a graduate of the Ontario Veterinary College, class of 1888.

Dr. Alexander Kotlan, lecturer in parasitology at the Royal Hungarian Veterinary College, of Budapest, Hungary, is the Visiting Professor in the Division of Veterinary Science of the Michigan Agricultural College for the present year. Dr. Kotlan has to his credit a formidable array of papers on the subject of parasitology. He has already appeared on the programs of the meetings of a number of the local veterinary associations throughout Michigan.

Among those who attended the football game between the Pennsylvania State College and the University of Pennsylvania, in Philadelphia, on November 15, 1924, were: Drs. B. Scott Fritz (U. P. '17), of Harrisburg, Pa.; J. T. McGrann (U. P. '21), of Trenton, N. J.; H. E. Kreidler (U. P. '20), of Jersey City, N. J.; W. J. O'Connor (U. P. '17), of New Bedford, Mass.; C. M. Thomas (U. P. '22), of Nassawadox, Va.; and E. A. Wilson (U. P. '23), of Hackettstown, N. J.

MISSISSIPPI VETERINARIANS TO DISCUSS ANTHRAX

Announcement is made elsewhere to the effect that the Mississippi State Veterinary Medical Association will meet at Greenville, January 19 and 20, 1925. The evening session the first day of the meeting will be known as "Anthrax Night," and papers and discussions will be devoted exclusively to the subject of anthrax. This disease having been unusually prevalent throughout certain sections of the South the past year, veterinarians have had an unusual opportunity to observe the disease in its different manifestations and also to check up on the results of many thousands of vaccinations.

NEW BULLETIN ON POULTRY

"The Culling and Feeding of Poultry" is the title of a well illustrated bulletin from the North Carolina Agricultural Experiment Station, which appeared recently. The subject matter has been prepared by Dr. B. F. Kaupp, Poultry Investigator and Pathologist, and is based on a part of the results of 10 years' feeding of poultry. Copies of the bulletin may be obtained by writing Dr. Kaupp, at Raleigh, N. C. With the interest being shown in poultry problems, by veterinarians, we believe there will be quite a demand for copies of this bulletin.

BUREAU TRANSFERS

Dr. S. O. Fladness (Chi. '12), from Baton Rouge, La., to Mexico City, Mexico, on inspection and quarantine work.

Dr. Lewis A. Licking (Chi. '04), from Milwaukee, Wis., to Madison, Wis., in charge of meat inspection.

Dr. Robert J. Digman (Chi. '08), from Madison, Wis., to Milwaukee, Wis., on meat inspection work.

Dr. Wm. T. Conway (Harv. '01), from Pittsburgh, Pa., to St. Louis, Mo., in charge of meat inspection.

Dr. C. J. Millen (Corn '03), from Mason City, Iowa, to Pittsburgh, Pa., in charge of meat inspection.

Dr. Clarence E. Elliott (Iowa '02), from Winona, Minn., to Mason City, Iowa, in charge of meat inspection.

Dr. J. J. Staab, (McK. '14), from Helena, Mont., to Chicago, Ill., on tuberculosis eradication work.

Dr. Roy F. Gard (K.C.V.C. '10), from Topeka, Kans., to St. Louis, Mo., on meat inspection work.

Dr. Don B. Strickler (Chi. '15), from Birmingham, Ala., to Atlanta, Ga., on meat inspection work.

TAKING NO CHANCES

Bella: "Do you have any difficulty in feeding your little dog?"

Donna: "No, I always try my cooking on my husband before I give it to Fido."

NECROLOGY

JOHN H. BLATTENBERG

Dr. J. H. Blattenberg passed away suddenly at Lima, Ohio, Nov. 12, 1924.

Born at Smithville, Ohio, May 2, 1869, Dr. Blattenberg obtained his early education in the public schools and the Smithville Normal School. He attended the Ontario Veterinary College, and was graduated with the class of 1892. He practiced for a year in Toledo, Ohio, assisting Dr. J. V. Newton, and then located at Lima. He established a very fine practice in that territory. His ability as a surgeon soon became recognized, and he was frequently called considerable distances to perform surgical operations. He gave special attention to lameness, and was a recognized expert in diagnosing and correcting the various lamenesses peculiar to race-horses. Dr. Blattenberg was the inventor of the burr, with which his name has been associated, used in the roaring operation.

Dr. Blattenberg joined the A. V. M. A. in 1902, and an annual convention of the Association was not considered complete unless he was in attendance. He regularly participated in the clinics held in conjunction with the meetings, and was chairman of the Section on General Practice, 1917-18. The same year he served the Association as first vice-president. Prior thereto, he was a member of the Committee on Publication (1912-14) and of the Committee on Reorganization of the Association (1915-16). He was a member of the Ohio State Veterinary Medical Association, and served that body as president for the year 1903-04.

Dr. Blattenberg was a member of the party of veterinarians who went to Europe to attend the International Veterinary Congress in 1914. When the United States entered the late war, Dr. Blattenberg offered his services, and received a commission as Major in the Veterinary Corps. He was assigned to the Fifth Division, and later was placed in charge of Base Hospital No. 6. He served overseas for about eighteen months. He was a member of the American Legion and served as Grand Marshal in the Armistice Day parade in Lima, the day before his death.

Few men are as highly thought of, in their home communities, as was Dr. Blattenberg. He was a good citizen in every sense of the word. He had many qualities which endeared him to all those around him. He radiated optimism at all times, was a splendid story-teller, and invariably the center of activities when anything was "going on" at a convention or a gathering of any kind. He could be equally serious when occasion demanded. His counsel was always valued highly by his fellow practitioners, who frequently called him in consultation.

The funeral services were very impressive, conducted jointly by the Commandery, of which he was a member, and the local post of the American Legion. Many members of the profession were present. Floral pieces were banked high on all sides of the casket, the tributes of those in all stations of life, who thus indicated their high esteem. In the cortege that accompanied the remains was Dr. Blattenberg's favorite riding horse, the one that he had ridden in the parade the day before his death.

The following editorial, "*The Gospel of a Smile*" appeared in one of the Lima dailies the day of the funeral.

Dr. John Blattenberg was an apostle of that gospel. When I first heard of the death of Dr. Blattenberg I said with sadness: "Lima has lost the priceless jewel of his sunny disposition, his optimism and his smile."

And then, in spite of my sadness I found my countenance suffused with a smile as I remembered the jocular disposition, the ready wit and the wholesome philosophy of John Blattenberg, as he lived among his fellow-men.

Then I knew that Lima had not lost the Blattenberg smile—that it will never lose it, for that matter—for a smile, such as this noble man dispensed, can never die.

His smile was the acme of democracy. Not a perfunctory smile for his closest friends but a benign countenance for every living human being. None too lowly to invite it, none so lofty that they could subdue it.

It was effervescent, sparkling, irrepressible, like old wine.

It was satisfying, genuine, sincere, like the warmth of a radiant fireside.

It was solacing, sympathetic, comforting, like the arm of a friend.

Even the lowly animals came to know it and trust it and those who were his closest friends could cash John Blattenberg's smile for its full face value, for back of each smile was that genuine spirit of integrity that guaranteed it, with interest.

Dr. Blattenberg is survived by his widow, one daughter, his mother, and one sister.

W. H. ROBINSON

Dr. W. H. Robinson, of Portland, Maine, died October 12, 1924.

Born in New York City, March 8, 1865, Dr. Robinson attended the public schools and was graduated from the New York College of Veterinary Surgeons in 1889. He practiced his pro-

fession in New York City, until 1902, when he removed to Somerville, Mass. In 1918 he located in Portland, Maine, where he practiced until the time of his death.

Dr. Robinson joined the A. V. M. A. in 1889 and during his membership attended many of the annual meetings, especially during the past twenty years. He served on the Audit Committee (1918-1919) and as Resident Secretary for Maine (1919-1921). In 1921 he was elected Third Vice-President. Dr. Robinson was quite active in veterinary affairs in the Pine Tree State. He served as secretary of the Maine State Board of Veterinary Medical Examiners for four terms. He was a prominent member of the Knights of Pythias, Odd Fellows and Elks. The profession in Maine has lost another outstanding member. Dr. Robinson is survived by his widow.

WILSON HUFF

Dr. Wilson Huff died at his home in Rome, N. Y., October 27, 1924. He had been poorly for about a year and, for the four weeks preceding his death, he had been confined to his bed.

Born in Napanee, Canada, Sept. 18, 1843, Dr. Huff came to Rome, N. Y., about forty years ago, following his graduation from the Ontario Veterinary College in 1885. He was appointed city meat and milk inspector, by the Rome Board of Health, in 1893 and held this position continuously, except for a period of about two years, until about a year ago, when poor health forced him to resign.

Dr. Huff joined the A. V. M. A. in 1893. He was a charter member of the New York State Veterinary Medical Society, and a member of the Central New York Veterinary Medical Association. He was a regular attendant at veterinary meetings in the Empire State and was highly esteemed as a citizen by those with whom he came in contact, officially and privately, professionally and socially, in his forty years of service in his community. Dr. Huff is survived by two daughters and one brother.

AARON CORNELL

Dr. Aaron Cornell, of Bad Axe, Mich., died Nov. 12, 1924. He was a graduate of the Ontario Veterinary College, class of 1895, and had been located in practice at Bad Axe for many years. He served as Judge of Probate for Huron County a number of terms. Dr. Cornell was a member of the Michigan State Veterinary Medical Association.

MARRIAGES

Dr. H. W. Broberg (K. S. A. C. '14), of White Hall, Ill., to Miss Marian Winn, of White Hall, Ill., September 25, 1924, at Springfield, Ill.

Dr. H. B. Morris to Miss Mabel Stevenson, both of Keota, Iowa, October 4, 1924, at Keota, Iowa.

Dr. Curtis A. Fridirici (U. P. '21), of Fogelsville, Pa., to Miss Valerie Irene Burns, of St. Louis, Mo., October 25, 1924, at St. Louis.

Dr. Charles E. Howard to Mrs. Margaret F. G. Massie, both of Lebanon, Ill., October 29, 1924, at Lebanon, Ill.

BIRTHS

To Dr. and Mrs. Luther D. Meyers, of Haxtun, Colo., a daughter, Mary Louise, August 18, 1924.

To Dr. and Mrs. A. F. Burger, of Alta, Iowa, a daughter, Adris Jean, October 10, 1924.

To Dr. and Mrs. R. F. Krenek, of Waco, Texas, a daughter, Frances Elaine, October 11, 1924.

To Dr. and Mrs. W. A. Cornell, of Emerson, Nebr., a son, Herbert Darwin, October 20, 1924.

To Dr. and Mrs. A. J. Thompson, of Hutchinson, Minn., a daughter, Lois Marett, October 27, 1924.

To Dr. and Mrs. E. R. Steel, of Grundy Center, Iowa, a daughter, Pency Jean, October 31, 1924.

PERSONALS

Dr. John A. Phillips (T. H. '12) is City Veterinarian of Houston, Texas.

Dr. James H. Spence (U. P. '24) has entered practice at Allentown, N. J.

Dr. Leon N. Reefer (U. P. '88) is City Veterinarian of Wheeling, W. Va.

Dr. C. V. Gott (T. H. '14) is occupying new office quarters at Portland, Ind.

Dr. J. J. Brougham (Chi. '89) has resigned from the B. A. I., at St. Louis, Mo.

Dr. Paul S. Lindley (Ind. '04), of Paoli, Ind., is Sheriff of Orange County, Indiana.

Dr. W. B. Washburn (Ont. '93), of Tiffin, Ohio, is reported to be in very poor health.

Dr. W. C. Reeder (U. P. '12), formerly at Raleigh, N. C., is now stationed at Elkton, Md.

Dr. M. J. Jones (Ont. '05) has removed from Lynchburg, Ohio, to Harrisburg, same state.

Dr. Clarence J. Bryer (U. P. '23) is now with the Pennsylvania Bureau of Animal Industry.

Dr. Langdon Frothingham (Harv. '89) has returned to Boston after a summer spent in Europe.

Dr. H. A. Bernas (San. Fran. '18), formerly of Iloilo, Iloilo, is now at Pilar, Capiz, Philippine Islands.

Dr. W. S. Lord (Harv. '90), of West Baldwin, Me., has removed to Portland, Me. Address: 472 Forest Ave.

Dr. Robert L. Galt (U. P. '23) has accepted a position with the Pennsylvania Bureau of Animal Industry.

Dr. J. R. Cunningham (Ont. '15) has removed from Hull, Quebec, to Summerside, Prince Edward Island.

Dr. Paul S. Dodd (Ind. '18), of Westfield, Ill., has been appointed County Veterinarian for Clark County (Ill.).

Dr. H. R. Wise (U. P. '14), of Elverson, Pa., has been appointed Chief Meat and Milk Inspector of Reading, Pa.

Dr. A. J. McKee (K. S. A. C. '23), has removed from Linn, Kansas, to Houston, Texas. Address: P. O. Box 1395.

Dr. E. F. Schroeder (O. S. U. '11), formerly at Harrisburg, Ohio, is now at 21 Wachusett Ave., Arlington Heights, Mass.

Dr. John W. Hermann (Cinn. '13) has been transferred from Williamston, N. C., to Southport, N. C., on tick eradication work.

Dean V. A. Moore addressed the American Public Health Association on the subject of rabies, at the recent meeting in Detroit.

Dr. Ernest G. Lechner (U. P. '18), of Pennsburg, Pa., has been appointed Veterinary Inspector for the Interstate Dairy Council.

Dr. J. V. Newton (Ont. '78), of Toledo, Ohio, attended the recent convention of the American Humane Association, in Toronto.

Dr. C. J. Mulvey (McGill '94), of Mooers, N. Y., has been engaged in area work for Franklin County, New York, since July 7, 1924.

Dr. W. N. Armstrong (Ont. '94), of Concord, Mich., has been elected president of the Jackson County (Mich.) Agricultural Society.

Dr. Joseph W. Vansant (U. P.), of Fox Chase, Pa., spent two weeks in the Maine woods on a hunting trip. He brought back the venison.

Dr. W. L. Endsley (K. C. V. C. '10), formerly at San Antonio, Texas, now receives his JOURNAL at 210 Westheimer Bldg., Houston, Texas.

Dr. E. H. Shepard (Ont. '88), who has been located in Cleveland, Ohio, for many years, has disposed of his practice, on account of ill health.

Dr. J. J. Lintner (Chi. '08), of Chicago, Ill., addressed the Rotary Club of Danville, Ill., recently. His subject was "Tuberculosis Eradication."

Dr. W. O. Trone (O. S. U. '07) is back at his station in Dayton, Ohio, after an absence of several months, on foot-and-mouth disease work in California.

Dr. O. B. Rahn (U. P. '14), of Leesport, Pa., has taken over the practice of Dr. H. R. Wise, at Elverson, and will maintain an office at Morgantown, Pa.

Dr. Edwin Laitinen (Ont. '16) announces the removal of his office and hospital from 425 Ann Street, Hartford, to 993 North Main Street, West Hartford, Conn.

Dr. S. H. Hopkins (Chi. '10), formerly of Claffin, Kans., is now located in Wichita. He has opened a small animal hospital and pharmacy at 1608 East Central.

Dr. F. E. Stiles (McK. '09), of Battle Creek, Mich., accompanied by his family, toured through Yellowstone Park, after attending the Des Moines meeting.

Dr. Clodoaldo A. Arias (U. P. '10), of Havana, Cuba, spent a few days visiting in and around Philadelphia, on his way home from the Des Moines meeting.

Dr. John H. Winstanley (U. P. '10), of Philadelphia, Pa., was recently confined to his home by illness, for about ten days. At last reports he was on the road to recovery.

Dr. W. S. Gimper (U. P. '10), of Harrisburg, Pa., and Dr. George K. Swank (U. P.), of Revere, Pa., spent two weeks on a fishing trip on Chesapeake Bay. They report marvelous success.

Dr. C. W. J. Haworth (Ont. '88), of Camrose, Alta., had his left hip broken in three places, on Sept. 1, by being caught by a falling horse. Dr. Haworth remarks that it was the horse's "last fall."

Dr. H. K. Wright (Mich. A. C. '15), who has been representing H. K. Mulford Company in South America, has been home on a vacation which was spent at Camp Kunneway, Bear Island, N. H.

Dr. T. P. Polk (U. S. C. V. S. '11), of the Kentucky Agricultural Experiment Station, addressed the Rotary Club of Lexington at one of the meetings in October. Dr. Polk showed the film, "Out of the Shadows."

Dr. S. G. Millgate (St. Jos. '12), of Brooklyn, Iowa, met with a serious accident recently, suffering a rupture of the left eyeball, which necessitated its removal. At last reports Dr. Millgate was getting along nicely.

Dr. E. W. Powell (U. P. '00), of Bryn Mawr, Pa., was kicked in the head by a horse, while attending the annual show and meet of the Philadelphia Riders and Drivers' Club, at Marple, Pa. The injury was reported to be not serious.

Dr. C. E. Herron was painfully injured at his farm near Raymond, Ill., recently. He fell from a wagon in which he was riding and one of the wheels passed over his right leg, bruising it badly. He also received a broken rib and a sprained shoulder.

Dr. W. G. Hollingworth (Amer. V. C.), of Utica, N. Y., attended the recent meeting of the American Public Health Association, in Detroit, and read a paper on "Municipal Meat Inspection." Dr. Hollingworth was given the Fellowship degree of the Association.

Dr. T. E. LeClair (Laval '90), of Calgary, Alberta, is leaving shortly for Montreal and New York from where he is sailing for a trip around the world, expecting to land on the Pacific Coast, Los Angeles or San Francisco, about next June. The doctor, having his winter home in Los Angeles, will spend a few weeks in California before returning to Calgary, but should be back to his practice next July.

